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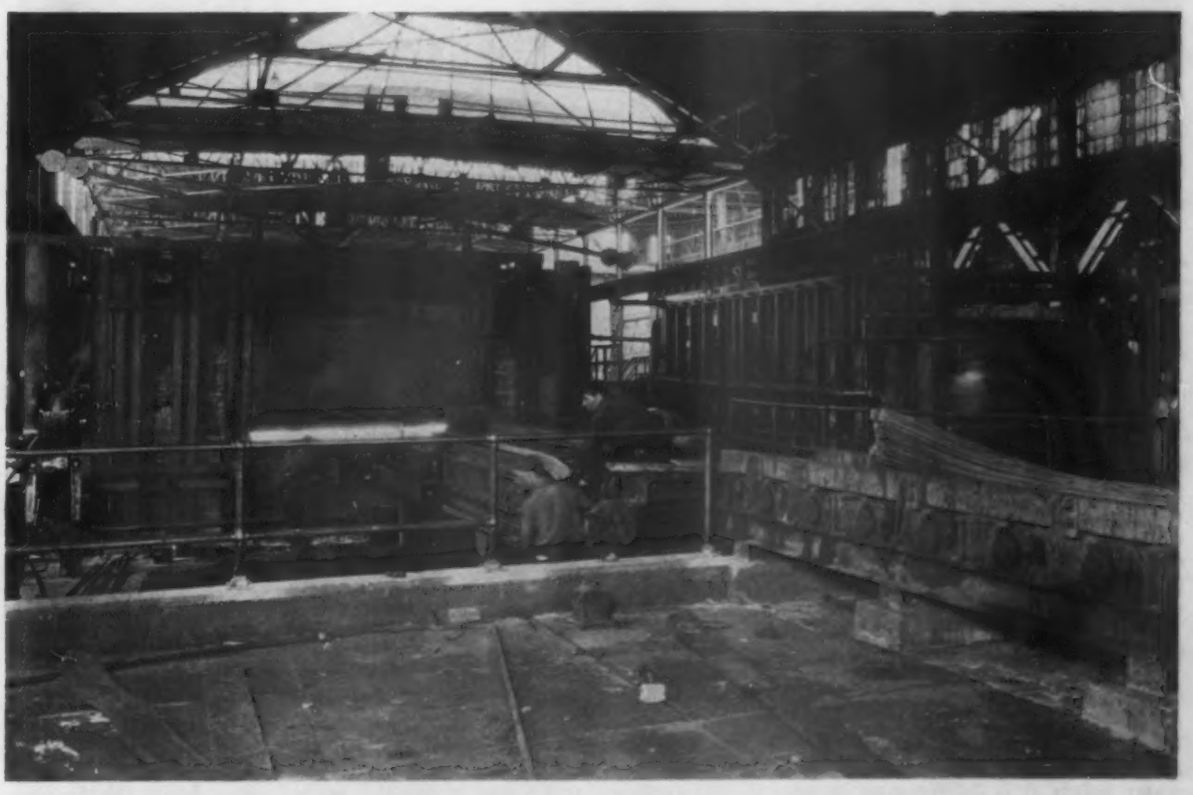
New Butt Weld Mills at Indiana Harbor

Youngstown Sheet & Tube Co. Completes Part of Expansion Program Inaugurated at Its Western Plant—Mills Will Produce 400 Tons Daily

ONE of the first steps taken by the Youngstown Sheet & Tube Co. upon its acquisition of the properties of the Steel & Tube Co. of America was to inaugurate a program for the enlargement of the plant at Indiana Harbor, Ind. Work is now under way on a 650-ton blast furnace and on a lap weld mill to have a capacity up to 16 in., which will replace a mill formerly located elsewhere in the plant. Two butt weld mills have just been completed and will roll pipe from ⅛ up to 3 in. Inasmuch as they are practically duplicates of each other and are housed in the same structure, a description of one of them will suffice.

A raw material yard, which is at right angles to the mill building, also adjoins a skelp mill which produces the Bessemer steel skelp from which the pipe is rolled. Small diameter pipe, it is to be noted, is generally cut and threaded by hand at the place of installation and Bessemer steel, because of its easier cutting qualities, is preferred to the open hearth product. The material yard is commanded by two 10-ton electric traveling cranes, furnished by the Morgan Engineering Co., Alliance, Ohio, which transfer the skelp to an inclined skid bed serving the pipe mill.

To facilitate the subsequent drawing of the steel through pipe-forming bells, one end of the skelp is pointed in a clipper shear, driven by a 7½-hp. alternating current motor, located adjacent to the skid bed. After pointing, the skelp is shifted to a roller approach table, driven by a 30-hp. 525-r.p.m. direct current motor, which conveys it to a magnetic charging machine. This machine, which is of standard Youngstown design, is noteworthy for its magnetic feature.



Each Welding Furnace Is Served by a Magnetic Charging Machine Which Delivers the Skelp into the Furnace Chamber. The roller approach table, which conveys the skelp from the material yard to the charger, is to be noted at the right

To advance the skelp into the welding furnace chamber, it is equipped with a roller table having hollow rollers with magnets inside. The magnetic attraction makes up for the lack of weight in the skelp and hence the tendency of the comparatively light skelp to slip off the rollers is overcome.

The charger operates on a track across the receiving end of the furnace. The carriage is driven by a 33-hp. 505-r.p.m. direct current motor and the roller table is operated by a 15-hp. variable speed 400-1600-r.p.m, direct current motor. The furnace is one piece of equipment which is not absolutely identical for the two mills. In one case the inside hearth width is 7 ft. 10 in. and in the other 8 ft. 11 in. Both furnace hearths, however, have an inside length of 22 ft. 9 in. and are 5 ft. in height. They are fired with gas from the company's own by-product coke ovens.

At the delivery end of the furnace are stationed the welder and the bell man. The welder grasps the pointed end of the heated skelp with a tong, then slips a bell over the end of the tong and places the tong in the end of a draw bench, where it is automatically gripped by a continuous chain belt which pulls tong and skelp through the bell. The draft through the bell curls the steel into tubular shape and welds the edges together without lapping. The function of the bell man is to clean the bells so they are ready for reuse.

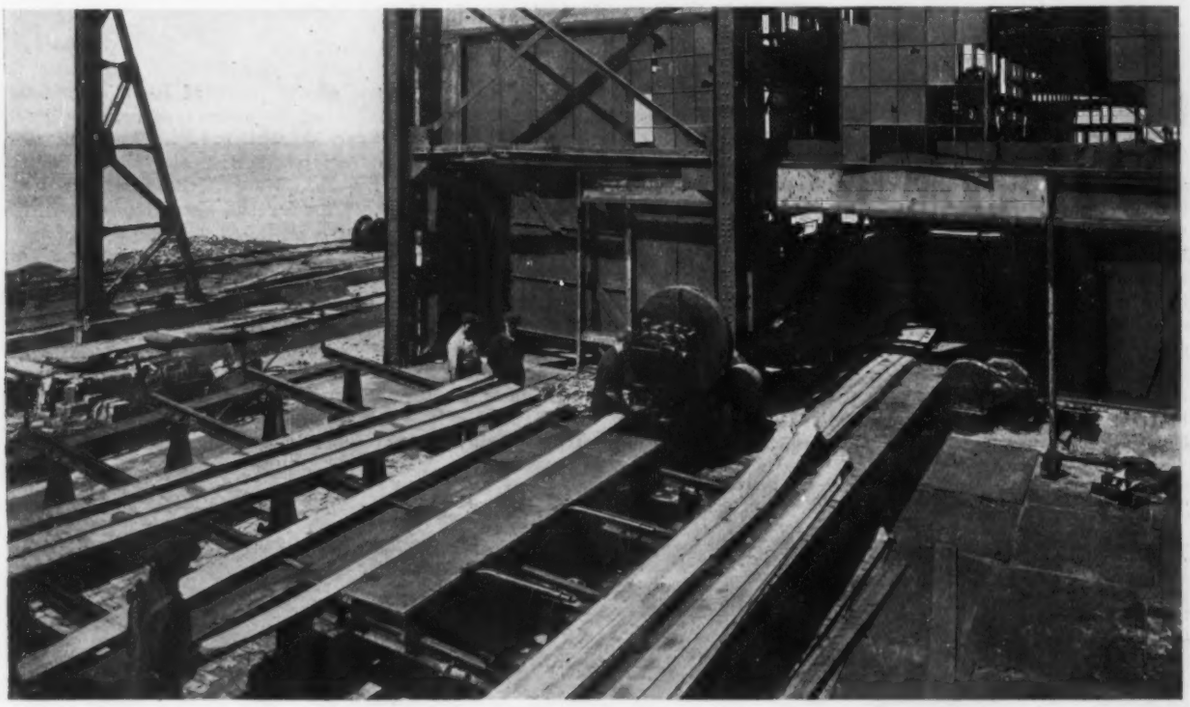
The draw bench is 66½ ft. long and swings through an arc so as to command the entire width of the furnace. It is pivoted at its delivery end. The radial movement of the bench is controlled by a bench runner, who is stationed in a pulpit on one side, where he enjoys an excellent view of the furnace. The continuous chain belt in the bench operates without interruption, but may be stopped instantly in an emergency. The bench is driven by a 60-hp. variable speed 300-900-r.p.m. direct current motor.

From the draw bench, tong and pipe are passed through a sizing roll, driven by a variable speed 35-hp. 400-1200-r.p.m. direct current motor, and are then delivered on to a rolling off plate. A perforated pipe hung above the rolling off plate sprays the steel with water before it is delivered on to an adjacent cooling rack.

Control of the continuous chain in the draw bench, the sizing roll motor, and the rolling off plate is in the hands of the sizing roll operator, who is stationed at one side of the delivery end of the draw bench. As soon as the pipe is deliverd to the rolling off plate a "tong man" removes the tong and returns it on a chain conveyor, located under the floor, to a point close to the welding furnace, where an operative, known as the "tong putter up," transfers the tong to a water pit for cooling. The chain conveyor is driven by a 7½-hp. 570-r.p.m. alternating current motor.

The pipe, on the other hand, is passed on to the cooling rack, which is of the inclined type and is suspended on concrete piers over a large pit in the floor. Fingers from continuous chain belts, driven by a 7½-hp. variable speed 400-1600-r.p.m. direct current motor, advance the pipe to the end of the rack, where it is discharged into a cradle. The pipe is then hoisted by overhead crane and conveyed to piling racks, which are constructed of upright pipes anchored in concrete piers.

Each butt weld furnace has a capacity of 200 tons of pipe per 24-hr. day. All of the furnace and mill equipment was designed and constructed by the Youngstown Sheet & Tube Co.'s own forces with the exception of the roller approach table, which was designed by the company, but constructed elsewhere. The motors were furnished by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., the General Electric Co., Schenectady, N. Y., and the Reliance Electric & Engineering Co., Cleveland.

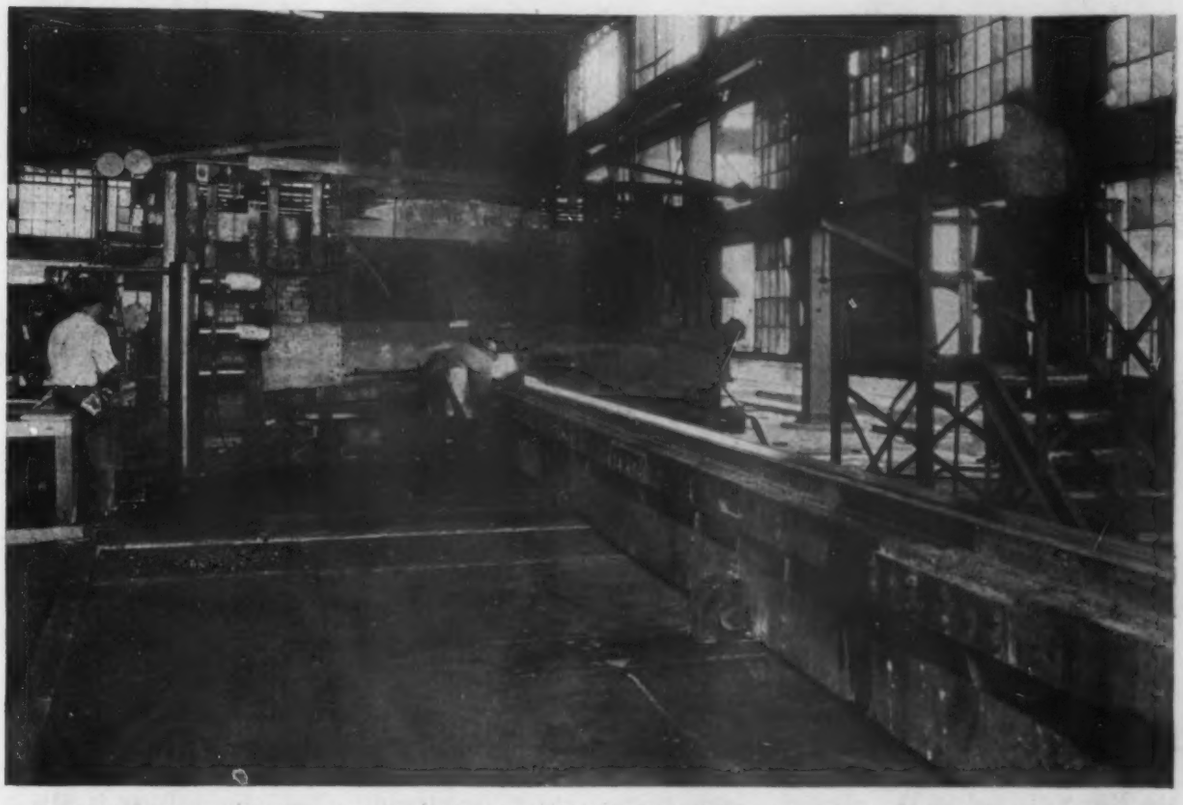


In the Material Yard Skelp Is Delivered to an Inclined Skid Bed and Is Then Pointed in a Clipper Shear and Passed on to a Roller Approach Table (to be Noted at the Right) Which Conveys it to the Magnetic Charger Serving the Furnace

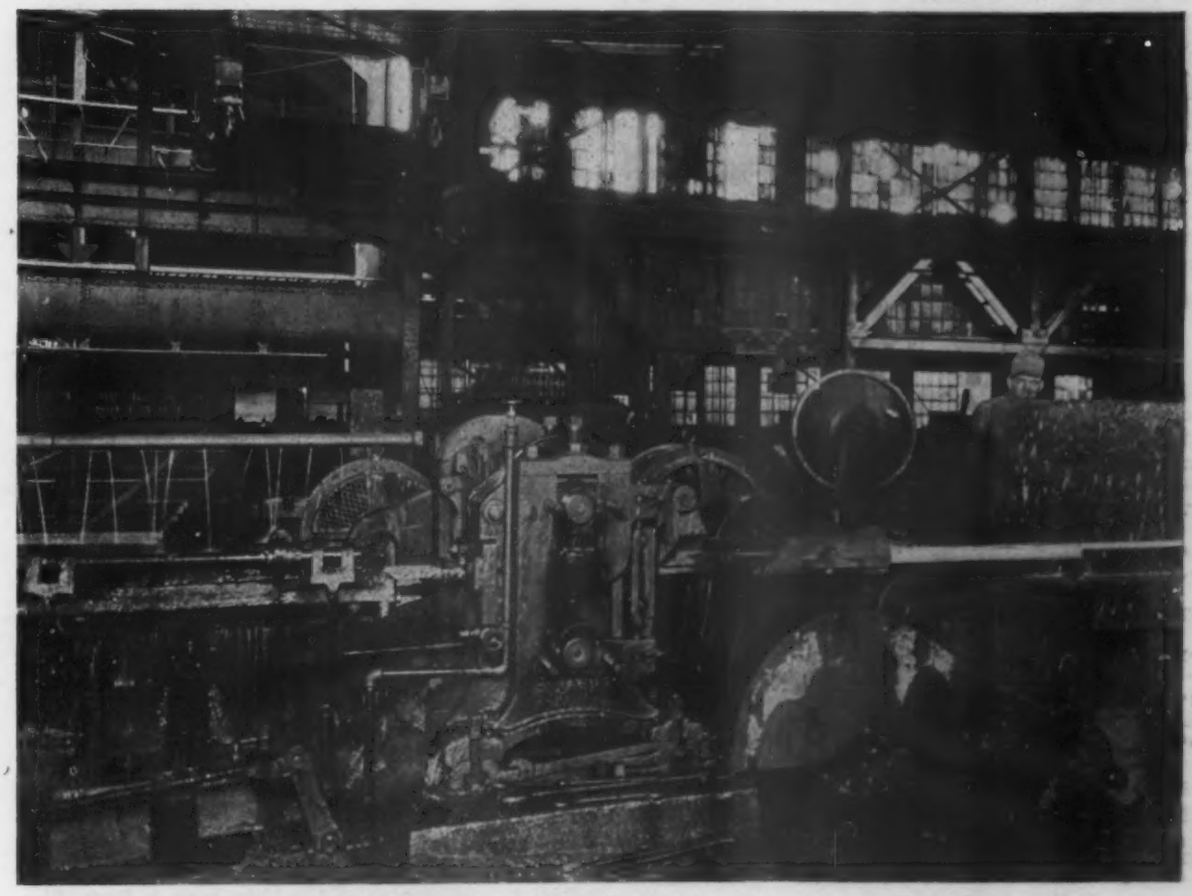
From the piling racks, pipe is advanced to the finishing department, where it is first taken to the inspection benches, then to the straightening benches, and from there to the pipe cutting off and threading machines. Subsequently it is passed through hydrostatic testing machines and then is transferred to the bundling benches. After bundling, it goes to the oiling machines and to the weighing scales, following which it is transferred to the shipping cradles for final disposition.

The floor of the finishing department is hydraulically pressed asphalt block pavement resting on a concrete base. Paving brick has been laid around the cooling racks and under the piling racks, while the furnace end of the building has a steel plate floor.

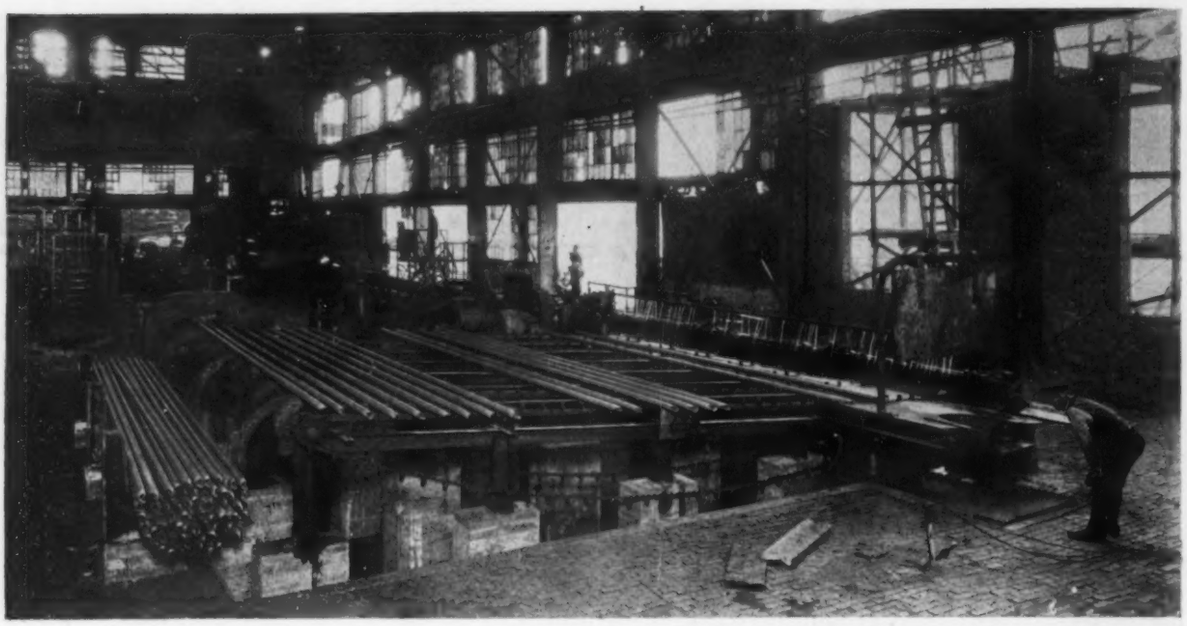
Attention has been given to illumination and ventilation. Continuous sash has been provided both in



The Delivery End of the Furnace Is Served by a Draw Bench Which Swings through an Arc so as to Command the Entire Width of the Hearth. The welder is stationed at the furnace while the bench runner who controls the radial movement of the draw bench is in the pulpit at the right



From the Draw Bench Pipe Is Passed Through a Sizing Roll Driven by a Variable Speed Motor. The sizing roll operator is to be noted in the rear, while at his right is a motor-driven ventilating fan



After Passing Through the Sizing Roll, Pipe and Tong Are Delivered on a Rolling-Off Plate, Where the Spindle Is Subjected to a Spray of Water. The tong man, to be noted at the right, then removes the tong and returns it to the furnace on a chain conveyor located under the floor. The pipe is passed on to the cooling rack from which it is discharged into the cradle to be seen at the extreme left

the side walls and in the monitors. Large motor-driven fans have been placed next to the stations occupied by the welders, sizing roll operators and tong men.

The furnace end of the building, which formerly housed the lap well mill now being replaced elsewhere in the plant, has a central longitudinal monitor and a pitch roof covered with tile, supplied by the Federal Cement Tile Co., Chicago. The finishing end of the building, which is entirely new, has the so-called "high and low bay" type of roof, consisting of lateral monitors. The covering is of matched lumber and Barrett specification roofing. The side walls are of Truscon steel sash with brick trim in contrast with the continuous sash and sheeting in the walls of the furnace end of the structure. The entire building is 88½ x 510 ft., and is commanded throughout its length by two 10-ton overhead electric traveling cranes supplied by the Morgan Engineering Co., Alliance, Ohio.

In a leanto adjoining the furnace department are control panels for the electrical equipment and a 750-gal. per min. plunger pump which furnishes hydrostatic pressure for testing the finished pipe. Joining the finishing end of the building at right angles is a warehouse, 160 x 200 ft., which is still in the course of construction. This structure will also be served by two 10-ton overhead electric traveling cranes. All erection work has been done by the company's own forces. The steel construction was fabricated by the McClintic-Marshall Co., Pittsburgh.

Conference Will Consider Human Relations in Industry

The fourth annual week-end conference at the Y. M. C. A. conference grounds, Estes Park, Colo., will be held July 18 to 20, the general subject being "Human Relations in Industry." Among the subjects to be discussed are the following:

The State and Industrial Relations—Hon. Henry J. Allen, Wichita, Kan.

Human Relations in Industry as Found in the Empire Properties—H. R. Straight, vice-president and general manager Empire Companies, Bartlesville, Okla.

From the Worker's Point of View—A. R. Tyler, machinist, the Great Western Sugar Co., Brighton, Colo.

Cooperation and Labor Unions—Earl R. Hoage, president Colorado State Federation of Labor, Denver.

Personal Achievement in Industry—Harry N. Clarke, president Corte-Scope Co., Cleveland.

Promoting Good Will in Industry—Judson G. Rosebush, president Patten Paper Co., Appleton, Wis.

The School for Industrial, Railroad and Business Executives will be held July 21 to 26. Among the subjects to be considered will be:

Human and Industrial Relations—Harry N. Clarke, president Corte-Scope Co., Cleveland.

Manpower in Industry—J. A. Hiller, city-wide industrial secretary, Y. M. C. A., Chicago.

Personnel and Public Relations—Hal S. Ray, director of personnel and public relations, Chicago, Rock Island & Pacific Railway Co., Chicago.

The Ethics of Profit Taking in Industry—Judson G. Rosebush, president Patten Paper Co., Appleton, Wis.

An interesting feature of the school will be the conducting of the forum by Harry N. Clarke, Cleveland, who for many years has been highly successful in conducting classes and forums for the discussion of religious and industrial subjects.

Shipping Board Loans $5,000,000

WASHINGTON, July 1.—The Shipping Board has loaned more than $5,000,000 for the construction of American flag tonnage, according to a statement issued by Chairman T. V. O'Connor. Loans for the construction of vessels to be built include $2,666,000 made to the Cherokee-Seminole Steamship Corporation, a subsidiary of the Clyde Steamship Co., to build two combination passenger and cargo ships, to cost not less than $4,000,000, which are to be built by the Newport News Shipbuilding & Drydock Co.; $1,000,000 to the Robert E. Lee Shipbuilding Corporation, a subsidiary of the Old Dominion Steamship Co., for one combination cargo and passenger vessel to be built at the Newport News yard, and $1,500,000 to the Coano Steamship Corporation, a subsidiary of the New York & Porto Rico Steamship Co., for another combination cargo and passenger vessel which also will be built at the Newport News plant.

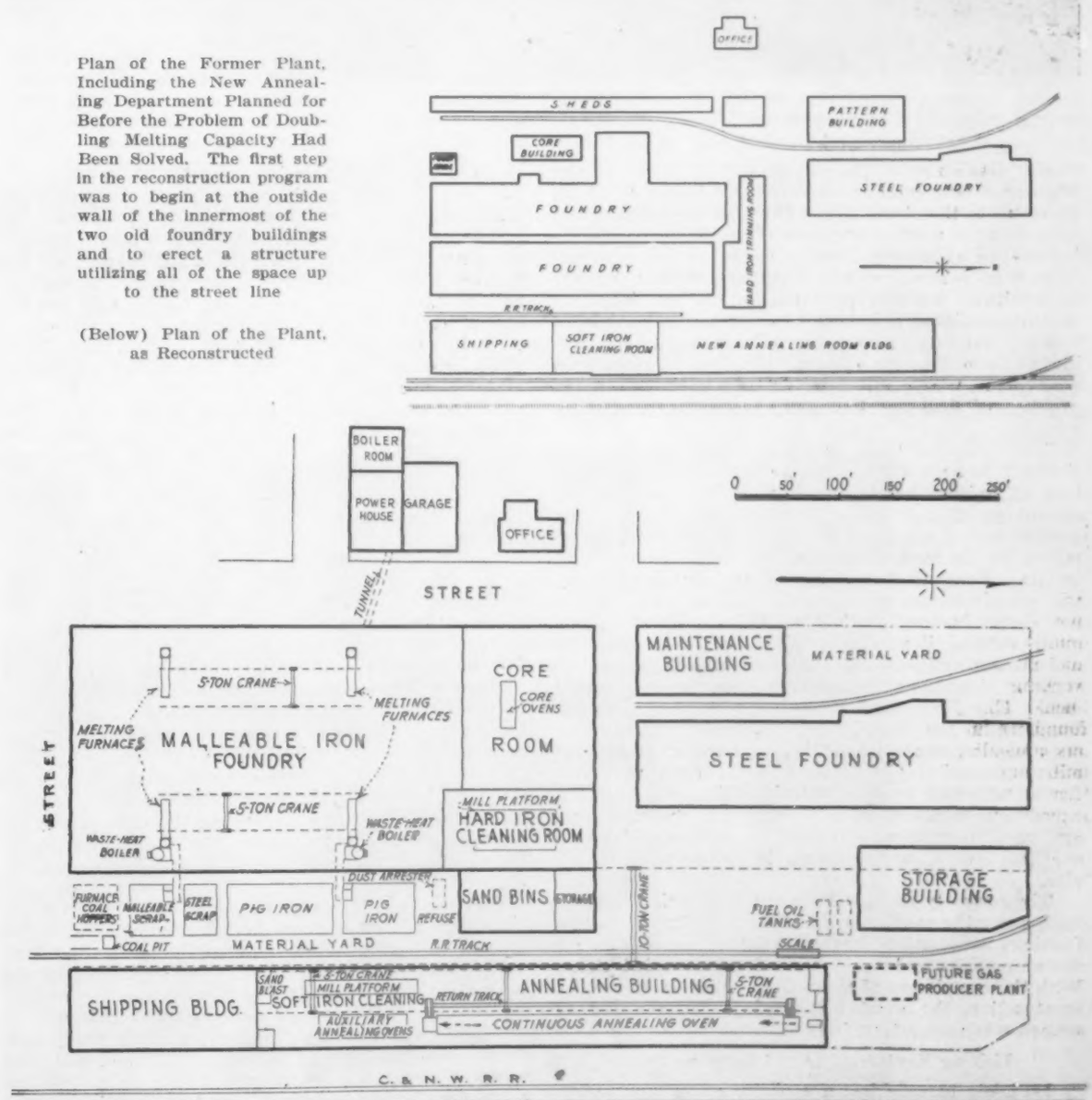
Reconstructing Plant Under Production

Powdered Coal Air Furnaces with Water System for Disintegrating Slag, Continuous Annealing Oven and Molding Floor Arrangement Are Features

BY GILBERT L. LACHER

TO rearrange and reconstruct a plant without interrupting production is alone a redoubtable task. To achieve this end and at the same time double the capacity was successfully done by the Belle City Malleable Iron Co., Racine, Wis. The situation precluded deviating radically from the former arrangement of the various departments, but nevertheless called for the creation of a scheme which would embody the latest ideas in plant layout and equipment. A. A. Wickland & Co., Inc., engineer, Chicago, was retained to undertake the work, which is now nearing completion. The plan devised is ingenious for its compactness and maximum utilization of available space, for its retention of the main outlines of the old plant arrangement without preventing the development of a new layout embracing modern principles, and for its easy adaptation to the necessities of uninterrupted output.

Formerly there were two parallel foundry buildings separated from the street by a core building, a railroad siding, considerable yard space and a row of storage



Plan of the Former Plant, Including the New Annealing Department Planned for Before the Problem of Doubling Melting Capacity Had Been Solved. The first step in the reconstruction program was to begin at the outside wall of the innermost of the two old foundry buildings and to erect a structure utilizing all of the space up to the street line

(Below) Plan of the Plant, as Reconstructed

The 20-Ton Air Furnaces Are Fired with Powdered Coal. A single motor elevates the coal to a hopper serving a pulverizer, operates the pulverizer, and drives a fan which blows the powdered coal on a tangent into a fuel mixer

sheds. Beginning at the outside wall of the innermost foundry, a new building was erected utilizing all of the space up to the street line. The core department was shifted to the northwest corner of the property, adjoining one end of the new foundry, while the hard iron mill room was rearranged and concentrated in a smaller area without limiting its capacity. In the meantime melting continued to be carried on in the remaining old foundry building. Meanwhile a new annealing building was added to the shipping building, in accordance with plans which had been decided upon before the problem of doubling the melting capacity had been solved.

The renovated plant, which in practically all essentials will be new, will have an annual capacity of 20,000 tons of finished castings. It gives the company the advantage of more modern equipment, better working conditions and a rearrangement of departments which makes for the most direct handling and routing of materials. Four air furnaces, fired by pulverized coal, will constitute the melting units. A sawtooth roof of new design insures excellent ventilation, as well as adequate natural illumination. The core sand handling and mixing equipment is both novel and efficient, while working conditions in the core room are considered ideal. The Belle City plant is one of five malleable foundries in the United States equipped with continuous annealing ovens. Both hard and soft iron tumbling mills and sand blast equipment are arranged with particular reference to safety considerations and the most expeditious handling of materials. The material storage yard, conveniently located, is commanded by an overhead crane, which serves the shipping platform also.

The company manufactures certified malleable castings, under the requirements of the American Malleable Castings Association, for the railroads, as well as for the automobile and agricultural implement industries. With the completion of the two air furnaces still under construction, the plant will employ 650 men and 80 women when operating full.

Melting Equipment for 80 Tons per Day

Each air furnace has a capacity of 20 tons and is fired with powdered coal, being served by an individual pulverizer, direct-driven by a 35-hp. 1800-r.p.m. motor. The same motor operates a chain conveyor which elevates the coal to a hopper through which the fuel is discharged into the pulverizer directly underneath. A fan, also operated by the motor, blows the pulverized coal on a tangent into a fuel mixer. A separate fan supplies air for a secondary blast, which passes through the center of a spiral to the tip of the burner, and for the top blast in the furnace chamber. The melting ratio is three tons of iron to one ton of coal and the cost of preparing fuel is 25c. per ton of iron melted.

Both furnaces have side walls of fire brick 18 in. thick, covered with 1-in. cast iron plates perforated with 1½-in. holes, spaced at 3½-in. centers. The perforations are to prevent cracking of the plates. The hearth measures 6½ ft. wide x 23 ft. long inside. The overall width of the furnace is 9 ft. 6 in. The length of the bungs, which are of cast steel of special design, is 8 ft. 6 in. Eight charging bungs clamped together give an opening 6 ft. wide for the introduction of metal. The furnaces were designed by A. A. Wickland & Co. and built by the Belle City organization.

An ingenious method for handling slag has been provided. A 2½-in. pipe throws a stream of water into the slag trough at a point just ahead of the slag spout, flushing the slag into a bucket which rests on two I-beams in a concrete pit full of water. The top of the bucket is flush with the foundry floor and perforations in its sides and bottom permit the water in the pit to enter. The water disintegrates the slag and separates it from occluded iron, which later may be recovered by magnet. A motor-operated chain block on a monorail is used to elevate the bucket, which is of 1 cu. yd. capacity, and to discharge the contents into a gasoline-operated dump motor truck, of the so-called "tructractor" type, made by the Clark Equipment Co., Buchanan, Mich.

For the disintegration of the slag a continuous water circulation system was devised. A single-stage 100-gal. per min. Chicago Pump Co. centrifugal pump, driven by 2-hp. motor, pumps water from the bottom of the pit and delivers it to the slag trough.

The two furnaces now under construction will be equipped with waste-heat boilers, each of which will have a concrete firing pit connecting with a tunnel communicating with the material yard, so that coal and ashes may be handled directly and without interfering with molding operations. The coal and ash pits in the yard are commanded by the material yard crane. Steam generated by the boilers will drive a 2200-cu. ft. Chicago Pneumatic Tool Co. air compressor. Exhaust

steam from the compressor will be utilized to heat water for the hot water heating system which extends through the entire plant. The heating coils are located against the outside walls and at well selected points under the trusses. The radiation was installed by the Almirall Co., Chicago and New York.

Arrangement of Molding Floors

The space between the two completed furnaces is commanded by a 3-ton electric traveling bridge crane, built by the Milwaukee Electric Crane & Mfg. Co. A crane of the same capacity will command the space between the two other furnaces. The crane which charges the furnaces, using special charging buckets, also delivers hot metal to the intervening floors where heavy work is done. The remaining floors are arranged for a 5-ton electric monorail system, which will deliver metal to the molders and carry castings into the mill room. At present, however, tractors and trailers are employed. The aisles are made of concrete with a covering of cast iron plates, except in the immediate vicinity of the furnaces, where a paving brick surface has been provided. The molding floors, of clay, are separated by concrete strips, 24 in. wide and flush with the floor level, to be used as runners for a motor-driven American Foundry Equipment Co. sand cutter.

The arrangement of the floors in unusual. There are four aisles running the length of the plant, two of which were located against the side walls to protect the molders from the heating coils located against the walls and from drafts from the continuous sash windows. Between the aisles are three double rows of molding floors, divided in each instance midway between aisles by a heavy plank wall against which the molding benches are placed. With this scheme, the molders work from the plank wall out toward the aisles and in no case are they required to work next to the windows. Molding machines, with which many of the floors are equipped, were furnished by the Milwaukee Foundry Equipment Co., Milwaukee, Wis., Federal Malleable Co., West Allis, Wis., and the Nichols Molding Machine Co., Brooklyn, N. Y.

Column centers in the foundry are 36 ft. apart, a distance spanning four of the molding floors, 9 ft. wide. The roof is of modified sawtooth design, every other tooth having continuous sash on both sides of the apex. All of the teeth have both top-hung and bottom-supported sash, to permit the widest possible opening for ventilation. In the case of the modified teeth, a top-hung sash is located on the other side of the apex, so that there can be a clean sweep of air from one side of the tooth through the other side. The design was especially prepared for the purpose of insuring adequate light and ventilation for molders working in the middle of the foundry.

Core Room and Sand Preparation

The core room which adjoins the foundry is a model from the standpoint of working conditions. Continuous sash in two of the side walls and in the sawtooth roof provide ample air and light. The floor is of concrete and the height of the room from floor to the bottom of the roof trusses is 18 ft. The benches are of steel frame with wood top and a sand box in front of the core maker. A hinged cover on the box permits replenishment of the sand supply from the back of the bench without interference with the work of the core maker.

The sand mixing equipment commands particular attention. A bucket elevator raises the sand to a revolving riddle, from which it passes through a hopper into a Simpson No. 2 sand mixer furnished by the National Engineering Co., Chicago. From the mixer it is discharged into a second bucket elevator from which it is passed through a bifurcated spout into two hoppers. The sand then is discharged into steel frame boxes with wooden sides which, when filled, are carried out of the way by a "jack lift" truck. There are three of these trucks in the core room, furnished by the Lewis-Shepard Co., Boston. Sand is transferred from the boxes to wheelbarrows. Enough sand is prepared by the mixing equipment in 2 hr. to last the core room all day. The mixer was designed by A. A. Wickland & Co., while the elevating equipment was constructed by the R. W. McIlvaine Co., Chicago.

It will be noted that the sand mixing equipment is located in the core baking department, which is separated from the core room by a partition extending from the roof down to within 8 ft. of the floor. The partition, painted white and made of asbestos board, protects the core makers from heat and gases emanating

The Hard Iron Mills Are Located on a Platform, Being Filled by Overhead Crane and Discharging by Gravity into Buggies Below. The driving mechanism and exhaust pipes are underneath the platform and are screened off to eliminate the possibility of personal injury

from the baking ovens. Mechanical core-making equipment in the core room includes an air-operated core machine, built by William Demmler & Brothers, Kewanee, Ill., and jolt machines supplied by the International Molding Machine Co., Chicago.

For baking there are six Coleman core ovens with inside dimensions 6 x 14 ft. x 7 ft. high, furnished by the Foundry Equipment Co., Cleveland. They are of the double-end type, with receiving doors on the core room side and discharge doors on the other side, where space has been provided for cooling, trimming, sorting, etc. The ovens are fired with city gas and blast is supplied by a motor-driven blower. Heat regulation is facilitated through individual pyrometers furnished by the Brown Instrument Co., Philadelphia. The cores are baked on steel racks, which are conveyed from core bench to oven by jack lift truck. A stairway from the core baking department leads to a mezzanine floor, which is used for the storage of core driers.

The Sand Mixing Equipment Prepares Sufficient Sand in Two Hours to Last the Core Department All Day. A bucket elevator (on the right) raises the sand to a revolving riddle, from which it passes through a hopper into a rotary sand mixer. From the mixer it is discharged into a second bucket elevator, from which it is passed through a bifurcated spout into two hoppers. Sand is drawn from the hoppers, as desired, into sand boxes, seen in the left background

Tumbling and Annealing of Castings

The hard iron mill room has a number of interesting features. The mills, furnished by the W. W. Sly Mfg. Co., Cleveland, are located on a steel platform, underneath which are situated the motor and line shafting to drive the mills and the exhaust pipes for conveying the dust to an arrester. Six tumbling mills are arranged on one side of the platform and four on the other side, with room for two more. Each row of mills is commanded by a 17-ft. span bridge crane equipped with electric hoist, for loading the mills. For unloading, the mills are turned over and discharged into wooden-side buggies spotted on the floor underneath. Around the platform is a clear passageway, so that a train of buggies can be made up for transfer to the annealing department. This type of buggy has two wheels with a caster in front, to permit sharp turns. Plans call for the installation of an electric monorail system which will carry the castings directly from the foundry into the hard mill room.

In the annealing building, 77 x 548 ft., is a gas-fired continuous annealing furnace 347 ft. long, built by the American Dressler Tunnel Kilns, Inc., Cleveland. Only five of this type thus far have been built in this country for malleable foundries; it is said to insure a more uniform anneal than is possible in the period type oven. Of tunnel-like construction, the oven has a standard-gage track running its entire length; on a parallel track outside, annealing cars are spotted preparatory to being charged into the furnace.

By means of an overhead crane the cars are loaded with annealing pots which have been packed with castings, properly sorted and chipped, after their delivery from the hard iron mill room. The cars then are pushed onto a transfer car at the receiving end of the oven, whereupon transfer car and burden are moved into the furnace by a J. I. Case gasoline tractor. Once in the oven, the cars of annealing pots are advanced periodically by a hydraulic ram. The heating cycle, i e., the time required for a car to make the trip from the receiving end to the discharge end, is five days. The oven has a capacity of 60 cars and the annealing of 60 tons of castings is completed every 24 hr. At the discharge end, the same type of transfer car is utilized to remove cars from the oven.

After cars of annealing pots have been removed from the oven and transferred to the service track, they are allowed ordinarily to cool in the atmosphere for 6 hr. before the castings are removed. At the completion of cooling they are discharged into dump buckets and then transferred to soft iron tumbling mills or the sand blast, depending on the class of work. After tumbling or blasting, the castings are discharged into buggies and conveyed to the shipping building, which adjoins the annealing room. The dust arrester serving the mills was placed on the roof to be out of the way. Mills, sand blast and dust arrester were furnished by the W. W. Sly Mfg. Co.

Four old annealing ovens were retained in the annealing department for emergency use. The annealing building has a concrete floor, continuous sash in the side walls and a pitch roof with continuous top-hung sash in the monitor. The roof of this building, as well as the foundry and core departments, is covered with gypsum tile, manufactured by the United States Gypsum Co., Chicago. The entire length of the building is commanded by three 5-ton cage-operated electric traveling Milwaukee cranes, used both for the loading and unloading of pots and the transfer of castings to the sand blast or the soft iron tumbling mills, which are on a platform similar to that in the hard iron mill room.

In the three-story shipping department building are four drop hammers, eleven grinding machines and two portable grinders—types of tools necessary in meeting the exacting specifications of the automobile trade. At one end of the first floor is a depressed bay for automobile motor trucks and on one side are doors adjoining a direct siding from the Chicago & North Western Railroad. The shipping room floor is on a level with freight car floors and motor truck bodies, so that the transfer of shipments to either is as direct as possible.

Lying parallel to the annealing and shipping building is the raw material yard, embracing steel scrap, malleable scrap, pig iron and sand storage bins, coal hoppers and a material storage shed. The yard will be commanded by a 90-ft. span cage-operated 10-ton electric traveling crane, operating on a runway 900 ft. long.

Steel Casting Plant

The steel scrap, it is to be observed, is for use in the company's electric steel casting plant, which operates in an adjoining building under the name of the Racine Steel Castings Co. This foundry is equipped with a 3-ton Heroult electric furnace which has been in operation since 1916, and has a capacity of 200 tons of finished castings per month. Here castings are made for tractors and automobiles, railroad specialties and equipment. Hence the company is in a position to supply both steel and malleable castings to the same customers, which is a very advantageous arrangement.

A feature of the new plant which is of obvious im-

A Stream of Water Is Introduced into the Slag Trough at a Point Just Ahead of the Slag Spout, Flushing the Slag into a Bucket Resting in a Concrete Pit Full of Water. The water disintegrates the slag and separates it from occluded iron, which later may be recovered by magnet. The perforations in the side wall cover plates of the furnace are to prevent cracking of the plates

portance to both the malleable and steel foundries is a laboratory, admirably illuminated and well equipped. Tensile strength and elongation tests are made on a machine manufactured by the Tinius Olsen Testing Machine Co., Philadelphia. Complete apparatus for making the needed chemical analyses has been supplied.

Architectural treatment of the construction work is most pleasing, all of the exterior trim being of pressed face brick. These features were executed by P. M. Adams, resident architect.

After Being Pushed onto a Transfer Car at the Receiving End of the Oven, Transfer Car and Burden Are Shoved into the Furnace by a Gasoline Tractor. Once in the oven, the annealing cars are advanced periodically by a hydraulic ram, to be noted in the background

NEW 27-IN. ENGINE LATHE

Greater Power and Rigidity and More Convenient Operation Aim in Improved Design

A 27-in. engine lathe, which has been completely redesigned to provide more driving power, strength and rigidity, greater ease of operation and more durability than heretofore has been placed on the market by the Niles-Bement-Pond Co., 111 Broadway, New York.

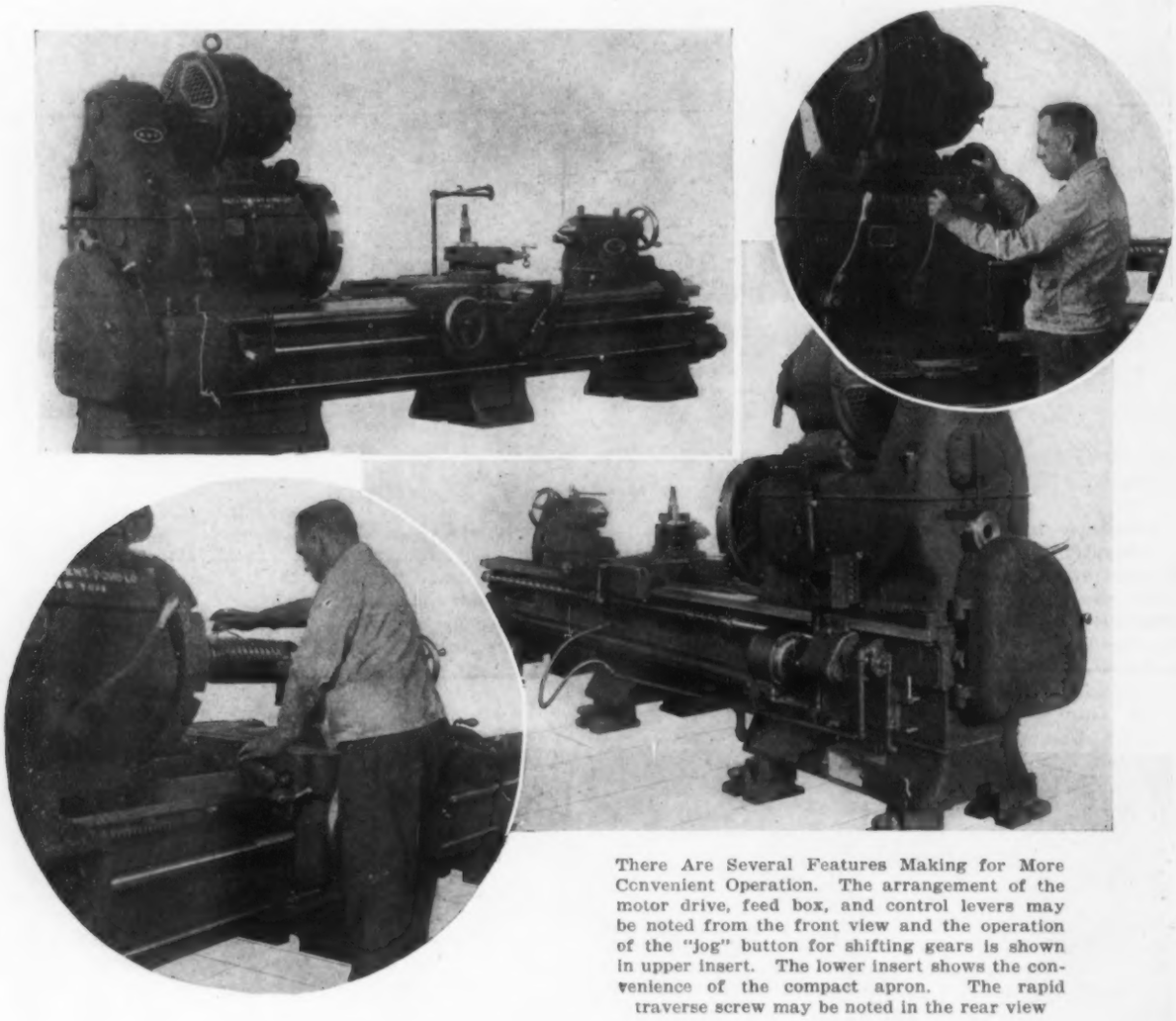
Features contributing to rigidity and strength include a solid web cast over the top of the bed, large compensated Vee-type ways for the carriage and positive fine tooth steel clutches in the apron for longitudinal and cross feeds. Heat treated steel Maag gears are used throughout. Overhung gears have been eliminated and all gear shafts are provided with at least two bearings. A heavy four-bolt tailstock with double plug spindle clamp is a feature.

The "jog" push button provided on the head for turning the motor while shifting gears is among the features making for ease of operation. A compact apron permits the operator to stand close to his work.

The bed of the machine has been designed to withstand without vibration the stresses induced by the cutting tool. The front ways of a lathe being subject to the greatest load from the cutting tool, heavy cross ties spaced 24 in. apart and an inclined solid web are provided to give the front track strong support. The inclined web serves also to carry the chips through the holes in the back wall of the bed to the back of the machine where they may be easily removed. They do not fall on the floor.

The compensated Vee-type ways for the carriage is among the features emphasized as assuring accuracy of lathe bed after it has been in service. The carriage has two sets of track wipers, one ahead of the other, to prevent scoring of the ways. The first wiper is made up of a thin brass plate arranged to press lightly against the track at an angle so that chips are pushed off. The second wiper is of heavy felt and takes up the very small particles not pushed off by the first wiper. Oil is applied through covered oil cup directly to the working surfaces between the carriage track wipers so that they aid in keeping the oil on the working surfaces instead of wiping it off. Oil grooves in the carriage serve to carry the oil to the entire surface of the way.

The compact construction of the apron permits the operator to get close to the work with minimum of effort. The upper slide is offset so that the ball crank on it does not interfere with the wrench on the carriage screw. The operator may get either longitudinal or crossfeed with the same lever.



There Are Several Features Making for More Convenient Operation. The arrangement of the motor drive, feed box, and control levers may be noted from the front view and the operation of the "jog" button for shifting gears is shown in upper insert. The lower insert shows the convenience of the compact apron. The rapid traverse screw may be noted in the rear view

Simplicity is a feature of the rapid power traverse, the arrangement of which may be noted from the rear view illustration. A right and left-hand screw at the back of the lathe is driven by a separate motor through the gear box in which the gears run in oil. A right and left-hand nut rotates on this screw ordinarily inside of a casing bolted to the carriage. When the rapid traverse lever at the front of the carriage is moved, it holds one or the other nut stationary depending on which direction it is desired to move the carriage.

The apron is cast in one piece. Instead of the friction feed, the machine has been provided with positive fine tooth clutches that may be snapped in and

(*Concluded on page* 54)

American Society for Testing Materials

Notable Symposium on Special Alloys at Annual Convention—Iron for Cast Iron Pipe—Progress in Magnetic and Fatigue Testing—Developments in Specifications

BY organizing and conducting the first symposium on a subject of leading importance to metallurgists and heat treaters, the American Society for Testing Materials brought to a successful culmination another year of its activity at its twenty-seventh annual meeting last week at Haddon Hall, Atlantic City, N. J. The Society added decidedly to its standing as a technical organization and the net result was the assembly and the discussion of literature and data on corrosion-resistant, heat-resistant and electrical-resistant metals and alloys which bring to a head developments in the last ten years. There was the usual intensive activity both during the year and during the convention of committee meetings and discussions which characterize the work of this unique society. There were no drastic changes in specifications, but the usual revisions to bring existing standards and tentative ones up-to-date, as well as some work on new standards, were reported and passed upon.

The attendance, while practically equal to last year's meeting, reached about 1000, though there were expectations that, in view of the substantial increase in membership during the last year, a new record would be established.

The change in policy of holding parallel sessions all the week was an experiment. On practically each day sessions on steel were held at the same time as those on cement and other subjects. While this may not have kept down the total attendance, it certainly prevented some from sitting in on certain sessions which were put at the end of the week. Undoubtedly the meeting Friday evening, on wrought and cast iron, suffered for this reason. Last year iron and steel subjects were concentrated on the first three days, with other subjects taking up the remainder of the week.

Year by year the scope of the society is broadening and new subjects are being taken up. Its annual programs, especially the one this year, are crowded with valuable material. An attempt is given in the following report to touch only on the high lights.

Symposium on Alloys Resistant to Deterioration

THE feature of the week's sessions was the symposium. So rapid has been the development in recent years of alloys having corrosion-resistant, heat-resistant and electrical-resistant properties that it was believed by the society that an important service could be rendered by gathering together the principal available data in this field rather than to attempt the formulation of standard or specifications. The result was impressive and valuable. It is the first symposium on this subject ever attempted. The 13 papers, together with those presented at Cleveland in May at a joint meeting with the American Society of Mechanical Engineers, constitute a remarkable contribution to the literature of this new subject.

The papers were divided substantially into three groups. The first group embraced corrosion-resistant alloys. Of these, including the introductory paper of the committee in charge of the symposium, there were seven. The second group was made up of four papers dealing with heat-resistant alloys while the third group of two papers covered electrical resistant materials. As a whole the various papers were limited to alloys of which the principal components are nickel, chromium, copper and iron.

A List of the Alloys

As an introduction to the entire subject, the chairman of the committee in charge of the symposium, Jerome Strauss, U. S. Naval Gun Factory, Washington, presented a most valuable report listing in tabular form the commercial materials at present being made in this country which come within the scope of the symposium. The name of each alloy, its manufacturer, its chemical and physical properties and its principal uses are presented in comprehensive tables. The data are based on information submitted entirely by the makers of each alloy and are offered as a guide to engineers and users of such products.

The committee which arranged the symposium and compiled the data were: Jerome Strauss, chairman; P. A. E. Armstrong, W. H. Bassett, L. O. Hart, A. I. Krynitsky, P. D. Merica and H. M. Williams.

Corrosion-Resistant Materials

Six papers by leading authorities were presented at the first session on Tuesday afternoon, June 24, after the presentation of the introduction.

"Corrosion-Resistant Alloys—Past, Present and Future" was the title of the paper by P. A. E. Armstrong, vice-president Ludlum Steel Co., Watervliet, N. Y., who in an exceedingly brief speech presented his contribution. As the title indicates, the paper is a review of metallurgical developments which have led up to the manufacture of chromium-bearing alloy steels with particular reference to the patent situation. He lays particular stress on the value of a 17-per cent chromium steel containing about 1.50 per cent silicon with the carbon under 0.10 per cent—virtually a stainless or rustless iron. The author also discusses the future effect of such alloys on the development of engineering construction.

Alloys in Acid Mine Waters

The importance of the corrosion problem in the coal mining industry was discussed in a paper by Robert J. Anderson and George M. Enos, of the Bureau of Mines Experiment Station, Pittsburgh, and instructor of metallurgy, University of Cincinnati, Cincinnati, respectively, the title of the paper being "Corrosion-Resisting Alloys for Use in Acid Mine Water." The nature of acid mine water from coal mines is discussed, typical analyses of such waters being given, with the nature of the corrosion process under such circumstances also taken up. On the basis of various tests made, a list of materials which are resistant to acid mine waters has been incorporated in the paper and the applicability of these materials to the construc-

tion of mining equipment indicated. A number of specific corrosion problems are pointed out.

"The Endurance Properties of Corrosion-Resistant Steels" was the title of an elaborate paper by Dr. D. J. McAdam, Jr., metallurgist U. S. Naval Engineering Experiment Station, Annapolis, Md. Only a summary was available in printed form, but the author presented a fairly full abstract illustrated by lantern slides. He describes the results of an investigation conducted at his laboratory to determine the relation of endurance properties to the results of the more common mechanical tests. The endurance tests were made by the rotating cantilever method and by the alternating torsion method.

Alloys and Sea Water

An elaborate paper, only a summary of which was available in print, was contributed by Jerome Strauss and J. W. Talley, both connected with the U. S. Naval Gun Factory, Washington. Mr. Strauss presented a comprehensive summary, aided by a large number of lantern slides. The authors give the results of an exhaustive study of the modification of physical properties of the newer ferrous alloys by heat treatment and their behavior when exposed to sea-water spray. Nearly 30 commercial corrosion-resistant steels in over 20 distinct compositions are involved. The materials were arranged in three groups: "Hardenable" chromium steels, chromium steels which do not "harden" and steels in which the predominating alloying element is nickel.

Two Foreign Papers

Two papers from European metallurgists were contributed to the symposium.

"Non-Rusting Chromium Nickel Steels" was a subject discussed by B. Strauss, connected with the celebrated Krupp firm, Essen, Germany. The author describes the development of two chromium-nickel steels in the physical research laboratory of his company, discussing first the valuable properties of chromium as an alloy with iron and steel. The first of these two alloys includes steels containing 10 to 16 per cent of chromium, 0.50 to 4.00 per cent of nickel and 0.10 to 0.60 per cent of carbon. The other steel includes those which range from 20 to 25 per cent of chromium, 4 to 20 per cent of nickel and 0.10 to 0.50 per cent of carbon. The results of corrosion tests of these alloys in comparison to steels of 9.25 per cent nickel content and with ingot iron are reported. The tests include corrosion in air and sea-water and in cold and boiling nitric acid solution. After presenting the physical and metallographic properties of these steels and their behavior at elevated temperatures, the paper concludes with references of their applications industrially. Dr. Paul D. Merica, International Nickel Co., New York, presented an abstract of this paper, changing in some important respects the order of the author's original contribution.

Stainless Steel Ball Bearings

Another paper from a foreign source was contributed by Axel Hultgren, chief metallurgist of a company in Gothenburg, Sweden. Taking as his title "The Carrying Capacity of Ball Bearings Made of Stainless Steel," the author makes a comparison of balls of this material called ordinarily low chromium steels. Stainless steels of American, British and Swedish production were used. In most of the tests, in order to reproduce regular service conditions for such bearings, water was admitted to the bearing while running. The object of the investigation was based on the hope of ball bearing manufacturers of obtaining a solution of the problem of rust-resisting ball bearings. The results of the tests are reported by the author as far from promising. The carrying capacity of the stainless steel bearings tested was from 10 to 20 per cent of that of ordinary ball bearings.

A New Alloy of Striking Properties

The discussions, which were not many, were presented at the close of the presentation of the papers.

A most interesting new alloy was brought to the attention of the society by W. B. Price, Scovill Mfg. Co., Waterbury, Conn. It is called an admiralty nickel under the trade name "Adnick." With a composition of about 70 per cent copper, 29 per cent nickel and 1 per cent tin, the alloy is claimed to have high tensile strength at high temperatures, to be extremely ductile so as to be drawn, stamped, spun, etc., and to be resistant to corrosion in certain liquids. When cold rolled it produces a material having 131,000 lb. per sq. in. tensile strength with 77,000 lb. per sq. in. in the annealed state. Among samples presented for inspection was some wire drawn down to 0.006 in. diameter from a ⅝-in. round without annealing.

Dr. C. M. Johnson, Crucible Steel Co. of America, Pittsburgh, referred to the fact that no one alloy was good for every emergency or condition, in the course of the presentation of some data covering the relative merits of "Resistal" to other alloys under special corrosive conditions.

Dr. John A. Mathews of the same company, New York, called attention to the absolutely new field which these alloys opened up, so diametrically opposite to the more familiar steels and alloys. In his opinion we must get used to new ideas and to the fact that no one steel will answer all purposes.

H. J. French, metallurgist Bureau of Standards, Washington, offered to fill in some of the blank spaces in the tables of alloys, formulated by the committee, from data as to the strength of certain alloys at high temperatures which he had determined.

The gratitude which metallurgists as a whole owe to several of the authors was emphasized by C. E. MacQuigg, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

The Stainless Iron Situation

The relative merits of the direct and indirect method of making stainless iron, as suggested by the paper by Mr. Armstrong, was discussed by B. D. Saklatwalla, Vanadium Corporation of America, Bridgeville, Pa. Dr. Saklatwalla's remarks were in part as follows:

> Mr. Armstrong reviews the history of the development of high-chromium steels from the phase of the patent situation, attaching considerable importance to this. He refers to the product or composition patents. As to the methods of manufacture of the material directly from chrome ores, which insures a wide and general economical application of the material for most purposes, the patent situation is more fortunate and clearer, especially in the United States. There has been considerable publicity given to the advancement of this art in Great Britain. As a matter of fact, however, the issued patent in this country covering the basic idea of using chrome ore with silicon as a reducing agent is about ten years old and several subsequent patent applications for specific methods of carrying out the basic idea in this country carry a date of priority ahead of any of the English patents. These applications are still pending in the patent office.
>
> Referring to the direct process in Mr. Armstrong's paper, quoting from the Bureau of Mines, Bulletin No. 6, of the coal mining investigations, published by the Carnegie Institute of Technology, inference is made that the material manufactured by the direct process may be liable to have a greater number of oxide inclusions. This is contrary to actual experience. Steel produced by the direct process, rolled into sheets and examined under the microscope, has actually proved itself to be equally as clean, if not more so, as that produced by the use of ferrochromium. In the direct process the ore is not thrown into the steel at haphazard but the incorporation of the oxide in the slag and of the reducing agent in the steel is carried out on a systematical basis. During the entire operation the steel is thoroughly protected from absorption of oxides by the presence of an appreciable quantity of the reducing agent and the final removal of the reducing agent is accomplished only just before tapping. This protection, through the presence of silicon, during the entire life-history of the heat is not afforded when the chrome is introduced by means of ferrochromium. The validity of this assumption has been perfectly proved by actual experience.
>
> Mr. Armstrong alludes in his paper to an intermediate class of alloys which, while not perfectly non-corrosive, are partially so. He alludes to a composition lower in chromium with nickel and silicon. Such partially rust-proof alloys, however, can be pro-

duced at a much less cost by the combination of an equally low chromium content with a very much lower copper content than the nickel specified. Such alloys are fairly rust-resisting, with a high degree of acid resistivity and cheaply produced.

In the high-chromium steel Mr. Armstrong advises the use of a silicon content. It is obvious that such a silicon content is useful for non-scaling properties at high temperatures. He further ascribes useful properties to the silicon content during the process of rolling, but he does not give us any data as to the influence of silicon on the non-corrosive properties at the ordinary temperature of the finished steel. It is generally acknowledged that the high-chromium steels with a low carbon content are more resistive than those with a higher carbon content. Silicon being in the same group of elements with carbon, would not silicon behave similarly? If that is the case, we may be acquiring the benefits in rolling at the expense of non-corrosive properties in the finished product. It is, therefore, important to prove conclusively by experimental evidence whether the presence of silicon affects the non-corrosive service of the material adversely or otherwise.

As to the addition of the other elements such as titanium, zirconium, etc., it appears superflous to add such elements. From various tests it appears to the writer that additions of other elements such as the above, or even manganese, while they may have a salutary effect as to the mechanical properties of the steel, are in no way desirable from the corrosion standpoint. The only exception to this seems to be copper, inasmuch as a content of copper seems to behave as a substitute for part of the chromium. It may seem, therefore, that a rustless iron, in which resistance to mineral acids is not desired, should consist of iron and chromium only and be as free from other elements and of as low a carbon content as possible.

Mr. Armstrong's omission of copper among the elements is rather remarkably conspicuous, as in the experience of the writer copper seems to be the most useful non-corrosive element in conjunction with chromium.

Heat-Resistant Materials

The evening session of Tuesday was devoted to the second part of the symposium. It was presided over by Dr. G. K. Burgess, director Bureau of Standards and a past president of the society, the afternoon session having in the chair the present president, Guilliaem Aertsen.

Printed summaries of only two of the four papers devoted to heat-resistant alloys were available: "Some Principles Underlying the Successful Use of Metals at High Temperatures," by F. A. Fahrenwald, consulting engineer, Cleveland, and "Deterioration of Some Metals in Hot Reducing Ammonia Gases," by J. S. Vannick, formerly research operator in metallurgy, Fixed Nitrogen Research Laboratory, Washington.

Metals and alloys suitable for high-temperature uses, their physical strength and other properties were discussed by the author of the first paper in a lengthy presentation illustrated by slides. Mr. Vannick presented results of studies of many metals, including copper, nickel and its alloys, ingot iron and low-carbon steel, in an effort to ascertain the materials best suited to equipment for nitrogen fixation. Many interesting slides aided in the author's presentation.

Chrome-Iron Alloys

Further data on the properties of this special class of heat-resisting alloys were presented in a paper, "Some Engineering Applications of High-Chromium-Iron Alloys," by C. E. MacQuigg, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y. The author presented his data under the following heads: Casting qualities of the alloy; machineability; workability, including rolling and forging; resistance to attack, particularly at elevated temperatures; and the strength of the alloys, both at ordinary and high temperatures. The metallographic characteristics of various compositions were outlined by means of lantern slides. It is believed, said the author in concluding, that great possibilities exist for the utilization of alloys of this general type, for low-temperature carbonization of fuel, recuperator design and, in general, all forms of apparatus in which a high thermal conductivity and a high tensile strength can advantageously be combined with the oxidation resistance of a refractory.

Valves for High Temperatures in Aircraft

A valuable and interesting contribution to the knowledge of the best steel for use in valve stems for aircraft engines where temperatures as high as 1600 deg. Fahr. prevail was the paper, "Characteristics of Material for Valves Operating at High Temperatures," by J. B. Johnson and S. A. Christiansen, engineering division, air service McCook Field, Dayton, Ohio. A summary of the authors' principal findings follows:

> The requirements demanded of steels for service in valves of aircraft engines are particularly severe. The metal must not only be proof against the chemical attack of the exhaust gases at temperatures as high as 1600 deg. Fahr. but must also be capable of withstanding the mechanical or eroding action of these gases impinging at high velocities on the junction of the head and stem and "wire-drawing" through the valve opening. In addition, the tensile strength should be high at operating temperatures, and it must be possible to make the metal in the stem capable of avoiding galling at the guides and to harden the tappet end sufficiently to prevent distortion due to the action of the valve-operating mechanism. This paper describes the results of laboratory tests and single-cylinder and multiple-cylinder engine tests of steels proposed for valve use.
>
> No materials have been found to fulfil all of the above requirements. High nickel-chromium steels and monel metal gall on the stem and distort on the tappet end; 14 per cent chromium steel becomes too soft when subjected to operating temperatures; and tungsten steel deteriorates rapidly under the attack of the hot exhaust gases. A cobalt-chromium and a silicon-chromium steel most closely approach the perfect aircraft engine valve steel but have serious limitations.

Electrical-Resistance Alloys

To this general division of the symposium two papers were contributed.

Stating that recent advance in the art of electrical heating has stimulated research in the field of high resistance alloys, M. A. Hunter and A. Jones, Russell Sage Laboratory, Rensselaer Polytechnic Institute, in a paper entitled "Some Electrical Properties of High Resistance Alloys," discussed three groups of these materials.

> 1.—Materials of high resistance for use at temperatures below 500 deg. C., having nickel as their major component.
>
> 2.—Materials of high resistance for use at temperatures above 500 deg. C., including alloys made up possibly of nickel, iron and chromium.
>
> 3.—Materials having special properties which render them useful under restricted conditions.

Some information has also been included on the electromotive force which may be expected from various combinations of high-resistance alloys as elements in base metal thermocouples.

Recognizing the need of a standard metal for thermocouples against which other metals and alloys can be checked, F. E. Bash, manager technical department, Electrical Alloy Co., Morristown, N. J., discussed important considerations in this connection in a paper entitled "Characteristics of Some Materials for Base Metal Thermocouples." He presents the results of tests in which the thermoelectric properties of a number of alloys are determined against copper used as a standard material. Reference is made to the use of platinum as a standard and a preference is expressed for copper, due to its high degree of purity and the ease of securing it. A method of calibration which has proved satisfactory is described and a recommendation is included that all new thermocouple materials be checked in the manner described.

Discussions

Very little time was left for discussing the papers at the evening session because their presentation took

so long. The session did not conclude until after 11 o'clock.

One point brought out by P. A. E. Armstrong regarding silchrome steels for aircraft valves was the suggestion that an increase in carbon content would perhaps materially meet some of the present objections.

The development of a series of alloys of the nickel-copper type under the trade name "Everbrite" was briefly described by W. F. Graham, metallurgist, Curtis Bay Copper & Iron Works, Baltimore, the producer.

Problems in Wrought and Cast Iron

BECAUSE the session on wrought and cast iron was the last one of the week, held Friday evening, June 27, the attendance was not so large as its importance deserved. However, the net result was an interesting one with considerable profitable discussion. It was presided over by Past-President C. D. Young, Pennsylvania Railroad, Philadelphia.

Wrought Iron

The report of Committee A-2 on wrought iron was presented by its chairman, H. E. Smith, engineer of tests, New York Central Railroad, New York. The committee recommended the advancement to standard of revised specifications for boiler tubes and for chain and also the specifications for merchant bar iron. The committee reported that revisions are being recommended in the standard specifications for wrought iron pipe, forging and staybolt, engine bolt, and extra-refined bars.

The discussion of this report was limited to requests for information as to the prevalence of steel in wrought iron scrap, and whether the percentage of phosphorus was specified. The chairman replied that specification requirements covered steel matter and that no maximum for phosphorus was provided for in the specifications. The usual motions were passed advancing the several groups of tentative specifications referred to in the report to the usual letter ballot of the society, followed by the adoption of the report of the committee as a whole.

Wrought Iron Chain

A contribution to the general subject of wrought iron was a paper entitled "Chain: Effect of Proofing and Annealing on Brittleness of Large Chain Links," by C. G. Lutts, metallurgist United States Navy Yard, Boston, who presented an abstract. The paper discusses chain links of good quality wrought iron in both the proofed and in the annealed state, giving the results of tests for resistance to shock. These results are said to indicate that the prevailing practice for proofing chain makes large links brittle and such links break with a sharp and short fracture under shock. There are further indications from the tests that this brittleness may be removed by annealing, and that annealing may be accomplished at various temperatures.

Discussion of this paper was opened by Chairman Young who called attention to the importance of the subject in railroad service for cranes and connecting links. G. E. Doke, engineer of materials and equipment tests, New York Central Railroad, New York, referred to the effect of phosphorus on the breaking of links when subjected to shock, and asked if any maximum for that element is provided for. Mr. Lutts gave the Navy limit as 0.10 per cent maximum.

T. H. Wiggin, consulting engineer, New York, discussed the effect of proofing chains on the brittleness caused thereby, as shown by the breaking of links when dropped on end from given heights upon steel blocks. This was a serious matter and was pointed to as an instance of what happened in service conditions in the foundry and in quarrying. Reannealing the chain corrected the trouble, but eventually the reduction in section through repeated stretching and annealing would impair the value of the chain, said the speaker. Nevertheless it was essential to anneal chains repeatedly and at regular intervals. The author of the paper closed the discussion by giving the information requested.

Malleable and Cast Iron

The report of Committee A-7 on malleable castings was presented by its chairman, W. P. Putnam, president Detroit Testing Laboratory, Detroit. This report was one of progress, the principal item being a proposed inquiry as to whether special specifications for malleable castings, such as for links, machinable malleable castings, etc., were desired by the purchasers of such castings. Furthermore, the memory of the late H. E. Diller, chairman of Committee A-7, was honored in the report. Finally, a resolution was passed asking that the tentative specifications for malleable iron now pending be referred to letter ballot of the society for advancement to standard.

The portion of the program devoted to cast iron was introduced by the report of Committee A-3 on cast iron, presented by Dr. Richard Moldenke, its chairman. The three tentative specifications for pig iron, high-test cast iron and chilled cast iron car wheels were presented for advancement by letter ballot of the society to the status of standard. These tentative standards have been amended during the year, after several meetings, in the following respects: The pig iron specifications have suitable reservations and additions which allow them to serve the steel and malleable casting industries in addition to the iron foundries. The chilled car wheel specifications have a clause inserted which provides for a gradual lowering of the sulphur maximum until the point 0.14 per cent is reached. Other minor changes are not of an essential character. The necessary resolutions were passed to effect the advancement of the specifications to standard in the usual manner and finally the report was adopted as a whole. In its report the committee announced that it will undertake the consideration of revisions of the standards specifications for cast iron pipe, its activities to be correlated with those of other organizations interested. A revision of the method of sampling and analysis of pig iron and cast iron to bring them up to date is contemplated.

An important portion of the program was devoted to a general discussion of cast iron for pipe. It was introduced by a paper entitled, "Recent Investigations of Cast Iron for Pipe," by Dr. Moldenke, who presented it in abstract. A second paper was entitled "The Standard Test Bar for Cast Iron Pipe, with Special Reference to Its Progressive Deflection," by J. T. Mackenzie, chief chemist American Cast Iron Pipe Co., Birmingham.

A summary of the chief points in Dr. Moldenke's paper is as follows:

> Recent developments in the cast iron pipe industry have brought the testing of this material into prominence. The desire of water works commissions of municipalities to get pipe of more resilient metal has led their engineers to attempt the stiffening of the existing specifications. To see if this is possible in commercial practice, the manufacturers of pipe have instituted an investigation the results of which are given in the paper.
>
> It was found that with present-day material and practice even the existing specifications were too difficult to meet generally. Operating tests to improve the metal by varying mixtures also failed to give the desired results. Test curves are given for various bars used to judge the quality of the metal used. The relation of composition and strength of cast iron as illustrated by this comprehensive series of tests is discussed.
>
> The final recommendations are that the whole subject of cast iron pipe be made a matter of research, the engineers to study methods of testing it, and the manufacturers of pipe to standardize their plants and practice, so that the best results may be obtained with materials that are commercially available.

The paper by Mr. Mackenzie presented data on 113 sets of 2 in. by 1 in. by 26 in. bars of widely different analysis and origin, showing that, within the elements of error of melting and testing, the deflection at a given point increases as the carbon plus one-fourth the silicon. A plea is made by the author for the incorporation in

specifications for cast iron water pipe of a minimum value for the deflection at 1900 lb.

Discussion

The discussion of these two papers and the general subject of cast iron pipe proved a long and interesting one, participated in by a number of water works engineers and metallurgists. The discussion was opened by F. A. Barbour, consulting engineer, Boston, and chairman of the joint committee on revision of the standard cast iron pipe specifications of the water works associations and the manufacturers. Mr. Barbour stated that the real intention of the engineers representing the consumers had not been fully caught by the authors of the two papers. Instead of proposing that when the 2 in. by 1 in. (broken on supports 24 in. apart) pipe test bar reached 1900 lb. load, it must have a deflection of at least 0.30 in., and after that there should be a load-deflection increment of 0.025 in. for every 200 lb. load; the real desire was that this increment should be had, no matter what deflection the bar might have at 1900 lb., after that point had been passed. Further, that if a bar broke at the minimum load of 1900 lb. specified it should have 0.30 in. deflection. Mr. Barbour pointed out the necessity of such a provision if brittle pipe is to be kept out of use in water systems. He stated that this proposed requirement was now actually used by Mr. Brush of the New York Water Supply Commission and that he was getting all the pipe he wanted under it. Mr. Barbour felt that the difficulty in getting satisfactory pipe today was not so much the supposedly poor pig iron, as the poor foundry practice used in the plants making pipe. Mr. Bolton requested that additional data, as prepared by Mr. Mackenzie for his paper and not printed as yet, be included in the annual volume of the society transactions. On additional request for this by W. P. Putnam, it was moved and passed that the publication committee take the matter under favorable consideration.

T. H. Wiggin discussed the papers at length, and in taking up the test bar question rather favored the idea that bars should be made representative of the pipe castings—or following out the British idea of a number of test bars. This is in opposition to the American idea of making one test bar serve as a measure of the quality of the metal going into castings, and not a measure of the castings themselves. The American idea calls for one bar, but with various values to suit metal that is to go into light, medium or heavy sectioned work. In fact Mr. Wiggin felt favorable to the French idea of taking actual pieces from the castings and testing these specialties. Mr. Wiggin also discussed the testing of centrifugal pipe by means of cutting off sections of this pipe and flattening, or breaking under pressure. In such a test it was very necessary to get the pipe laid so that the right thickness was had at top and bottom (as pipe was usually not exactly concentric) otherwise the test would be unreliable.

Secretary C. L. Warwick gave a resumé of the proceedings at the general meeting of representatives of associations interested in cast iron pipe held under the auspices of the American Engineering Standards Committee in New York, June 6, the subject in all its correlated branches being put under the joint sponsorship of the American Water Works Association, the American Gas Association, and the American Society for Testing Materials. He requested Dr. Moldenke to add to his paper, in the report of the discussion, a series of results based upon the test data, curves, etc., which would conform to the basic idea as given by Mr. Barbour in his discussion given above. This Dr. Moldenke promised to do, as the matter would undoubtedly form one of the main points of discussion when the joint societies took the cast iron pipe subject up for specifications revision.

Mr. Mackenzie then closed the discussion on his paper by giving some interesting data on iron that would pass the pipe specifications but would make poor pipe, and Dr. Moldenke also closed the discussion on his paper by offering his best cooperation in following out the ideas of Mr. Barbour, which neither he nor the manufacturers had understood in the way intended by the engineers. He dwelt again upon the very unfortunate situation the furnaces found themselves in at present, which meant the introduction of enormous quantities of scrap for simple remelting to pig, and could not give the same quality in the pig made as was formerly the case. The one set of bars quoted in Mr. Mackenzie's paper which gave such astonishing deflections for a very soft iron was a case in point. This—Shelby—coke iron was from a furnace which produced a very small daily tonnage and was not forced. Hence the iron was exceptionally good for making castings, for with an average breaking load of 2000 lb. the bars had a deflection of over 0.60 in., or a passing load and double the required deflection.

It was 11.30 p. m. when the extremely interesting and highly important topical discussion ended, and with it came adjournment of the meeting.

Magnetic Analysis and Fatigue of Metal

THE sessions of the society on magnetic analysis and fatigue of metals have, in the last two or three years, become an important feature. On these occasions the leading authorities on these two subjects contribute in person and in written form reports of the progress made in the year that has passed. The meeting this year was no exception.

Magnetic Analysis

The session was held Friday morning, June 27, with Past-President J. A. Capp, General Electric Co., Schenectady, N. Y., in the chair. The first portion of the program was devoted to magnetic analysis, the subject being introduced by two reports of the society's committees on this subject. The report of committee A-6 on magnetic properties, of which Dr. C. W. Burrows is chairman, recommended that the tentative methods of testing for magnetic properties of iron and steel be advanced to standard, with certain modifications, details of which are given in the report. The committee also reported that the time is not ripe for the preparation of specifications covering magnetic and other properties of iron and steel as required in the construction of electrical and magnetic equipment.

The other committee report was that on magnetic analysis, committee A-8, submitted by the chairman, F. P. Fahy, consulting engineer, New York. The report was one of progress on the studies of the committee on the magnetic analysis of steel, with special reference to the committee's work in an investigation of the magnetic properties of high-speed drills. The committee's work during the year has been largely one of a continuation of the work which was announced at the meeting a year ago when the subject of the magnetic analysis of the properties of high-speed drills was first presented by A. V. DeForest.

Analysis of High-Speed Drills

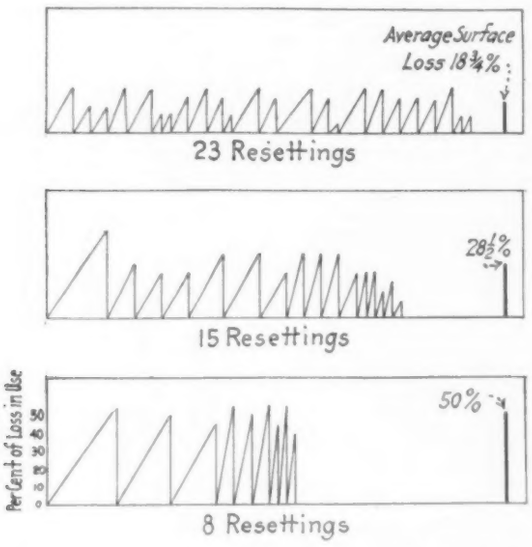
A paper entitled "Magnetic Tests of A S T M Drills," by W. B. Kouwenhoven, Baltimore, described in detail some of the work of the committee during the last year and was presented by the author. Not being available in printed form, the author went into some detail in his presentation. The paper describes magnetic tests on 51 different twist drills, the various tests being conducted by different members of committee A-8. Both direct current and alternating current methods were used and compared and a new alternating current comparison method for testing drills is described in the paper. Extensive hardness and drilling tests of the various drills were made and are reported upon, and an attempt was made by the investigation to classify the drills by means of the magnetic data so as to eliminate from the lot all drills that gave

(*Continued on page 55*)

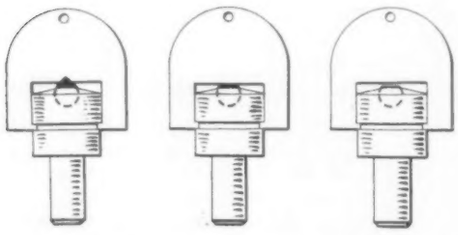
Gage Devised for Protecting Diamonds from Abuse

In the use of diamond tools for truing grinding wheels, the length of time that the diamond should be used is usually left to the discretion of the individual operator, subject to some inspection by the foreman. It frequently happens that a particularly hard diamond finds favor with the operator, who continues to keep it in service for too long a time, thereby imperiling the life of the diamond.

A device known as the Dykon gage and intended to protect diamonds from abuse, indicating, as shown in the accompanying illustration, when a diamond has worn to the lowest safety level and should be reset



Comparative Chart Showing Average Life of Three Diamonds of Same Quality and Size. Under careful use the diamond rendered 48 weeks service as shown in upper curve. That in the middle curve with average use and delayed resetting gave 40 weeks. The lower curve shows results of careless use, the diamond having lasted only 28 weeks



Gage for Indicating When Diamond in Diamond Tool Should Be Reset. The diamond at safety line is shown at center and below safety line, indicating misuse, is at the right

has been brought out by the Joyce-Koebel Diamond Co., Inc., 39 West Thirty-second Street, New York. The gage is used in conjunction with a grooved diamond tool, the gage itself being standard, but the groove varied and registered according to the size and shape of the diamonds. The device is available for all types of diamond holders. Simplicity of operation is a feature, the gage being used without removing the diamond holder from the machine. Each time the diamond is reset an entirely new holder, properly grooved to permit of gaging, is provided.

The use of the gage may be noted from the illustrations, the left-hand one of which shows diamond tool as it leaves the company's laboratory, the position of the gage clearly indicating the portion of the diamond that may be used with safety. The center illustration shows the diamond worn to the safety line, after which it should be reset. The position of the gage in the right-hand view indicates that the diamond has been worn below the safety level and its life imperiled.

A comparative chart showing the average life of three diamonds of the same quality and size under various conditions of care, the diamonds having been employed in the truing of grinding wheels used in crankshaft grinding, is also reproduced herewith. Three results are shown, the percentage of loss from careful use, average use and from abuse. The upper curve is of a diamond which had careful use and gave excellent service for 48 weeks, with 23 resettings. In the second case the diamond was given average care, its period of utility being 40 weeks with 15 resettings. The lower curve depicts the history of a diamond that was abused through ignorance and neglect and that lasted only 28 weeks, rendering less than 50 per cent of the service it could have performed.

The hard outer surface of a diamond gives the longest service and by resetting the diamond according to the gage indications the maximum of the outer surface is made available for use. A diamond that has been used beyond the depth of the gage and worn to a very flat surface requires greater pressure in dressing the grinding wheel, in which case a greater amount of heat is generated and the diamond exposed to the danger of breaking and disintegrating. It is emphasized by the makers that under ordinary practice a large percentage of the diamond is needlessly broken and performs no duty.

New England Iron and Hardware Association

Charles A. Haines, Dodge-Haley Co., Boston, was elected president of the New England Iron and Hardware Association at the annual meeting held Tuesday evening, June 24, at Young's Hotel, Boston. He succeeds Myron B. Damon, Fitchburg Hardware Co., Fitchburg, Mass., who served two terms.

E. R. Brayton, Belcher & Loomis Hardware Co., Providence, R. I., was made vice-president to succeed Mr. Haines. George J. Mulhall, manager and heretofore assistant treasurer, was made treasurer to succeed Charles H. Breck, Joseph Breck & Sons Corporation, Boston, who is relinquishing many of his business activities.

Directors elected for the ensuing year are: Charles A. Adams, John B. Varick & Co., Manchester, N. H.; C. D. Alexander, Emery-Whitehouse Co., Portland, Me.; R. M. Boutwell, Standard Horseshoe Co., Boston; William H. Bowe, Herrick Co., Boston; F. Marsena Butts, Butts & Ordway Co., Boston; E. R. Brayton; Franklin E. Bragg, N. H. Bragg & Sons, Bangor, Me.; Frank F. Chase, Chase, Parker & Co., Boston; G. M. Congdon, Congdon-Carpenter Co., Providence; M. B. Damon; Clarence C. Dodge, George F. Blake Mfg. Co., Cambridge, Mass.; George M. Gray, Peter Gray & Son, Inc., Cambridge; Charles A. Haines; Charles W. Henderson, Arthur C. Harvey Co., Allston, Boston; and Robert H. Sanderson, E. P. Sanderson Co., Cambridge.

Mr. Haines enjoys the distinction of being one of the charter members of the association as well as being associated with one wholesale hardware house over an unusually long period of years, his connection with the Dodge-Haley Co. extending back 53 years.

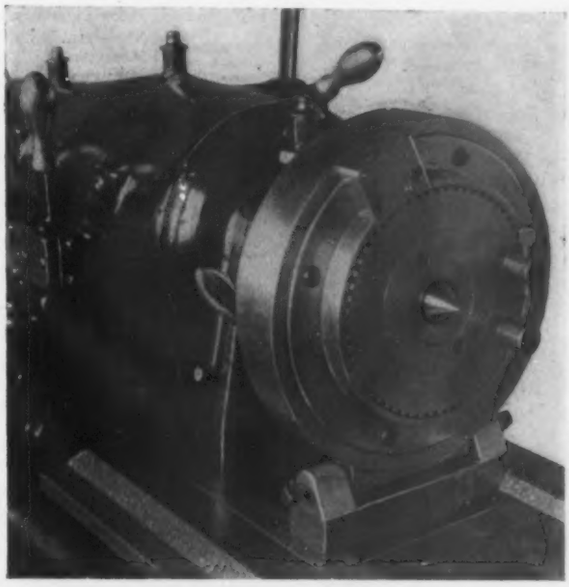
At the meeting a testimonial to the memory of the late Austin H. Decatur, Decatur & Hopkins Co., Boston, was read into the records of the association. The report of the membership committee disclosed a slight loss in membership during the past year. The report of the credit committee showed that 65 to 70 per cent of the claims submitted for collection to the bureau of credits were collected. Virtually every jobbing house in the New England hardware field is a member of the association, as well as numerous manufacturing concerns.

Other reports submitted intimated that the jobbing hardware business during the first four months of this year were satisfactory, with bookings well in excess of those for the corresponding months last year. In May there was a sharp downward swing in the business curve, and so far this month the recovery has been slow.

Speed-Reducing Face Plate for Pratt & Whitney Lathes

A speed-reducing face plate adaptable to its new 16 in. model B lathes, providing a 6 to 1 reduction to whatever spindle speed is engaged and making available speeds as low as 2 r.p.m., has been placed on the market by the Pratt & Whitney Co. of Hartford.

From the accompanying illustration it may be noted that the attachment takes the general form of a face plate. A gear is attached to the spindle nose and two planetary gears mesh with this gear and a large fixed internal gear which is held from rotating by being clamped to the bed. The planetary gears are attached



Speed-Reducing Face Plate for Use on Lathe, Providing a 6 to 1 Reduction to Whatever Spindle Speed Is Engaged. It was developed primarily for relieving operations, but has other uses also

to a separate plate, which carries a driving dog, and this plate is given the reduced speed through the gearing.

The regular headstock center which is mounted in the spindle nose being used for this attachment, the accuracy with it is said to be the same as the accuracy of the lathe itself. Loss of alinement due to extra mechanism being inserted between the lathe spindle and the work center is therefore obviated. Simplicity of design and ease of operations are features emphasized.

The device has been developed primarily for use in a variety of relieving operations. This type of work requires very slow spindle rotation, and as the attachment provides speeds as low as 2 r.p.m. the range of relieving work which may be accomplished with it is greatly increased. The relieving attachment for the model B lathe has been designed in conjunction with the speed-reducing face plate so that no additional relieving tables are needed. There are two differently speeded drives provided for the relieving attachment, one for use with the face plate and the other for ordinary relieving without it. Thus the same tables apply in either case.

The slow rotation provided by the attachment is also emphasized as making possible extremely accurate thread chasing because of the use of the head stock center without any intervening parts. This feature is of advantage in truing up precision screws.

Another use of the speed-reducing face plate is the cutting of extremely long leads, leads up to 12 in. having been cut without difficulty. This is emphasized as opening up a range of work hitherto considered impractical for an engine lathe. Large leads are claimed to have been cut with a feed of 0.002 in. without showing chatter marks. The face plate may be employed also for accurate indexing. A plate with 60 notches gives every subdivision needed for ordinary work requiring multiple starts. A convenient pawl engages the notches as desired, and each notch is numbered so that there is difficulty in obtaining correct indexing. The indexing feature is particularly valuable for the multiple starts which usually accompany long leads. If desired the gearing may be locked so that there is no speed reduction, and the attachment then becomes a regular indexing face plate.

Guy C. Riddell Appointed Chief of Newly Created Minerals Division

WASHINGTON, July 1.—Guy C. Riddell, Rye, N. Y., consulting engineer of New York, has been named chief of the newly created Minerals Division of the Bureau of Foreign and Domestic Commerce. The division was organized at the suggestion of the American minerals and metals industries and involves the consolidation of the present Petroleum Division with the non-ferrous metals section of the Iron and Steel Division. The steel division has added the hardware line to its work. It is the hope of Secretary Hoover that the Minerals Division will develop a broad and useful service to the metal and mineral industries of the United States. Many features will be added to the service for the purpose of providing maximum assistance to manufacturers and exporters of minerals and metals.

Mr. Riddell graduated from the Massachusetts Institute of Technology in 1904. As superintendent of the East Helena Smelter, he served with the American Smelting & Refining Co. for 12 years. For two years during reorganization and modernization of plants and processes of the Australian lead and zinc industry undertaken by the Brokenhill Associated Smelter in 1912, Mr. Riddell was engaged in the direction of the work. As metallurgical advisor to the United States Tariff Commission, he directed preparation of some 100 industrial surveys and conducted investigations into the metal and mining manufacturing industries of the United States. Practical experience in the export field of mineral and metal commodities was gained as general manager of a New York export and import house engaged in the shipment of machinery, metals, ores and chemicals to the Far East, and as one of the incorporators of the first American corporation formed under the China trade act.

International Company to Make Electrolytic Iron in America

A forward step in the manufacture of electrolytic iron has been taken by an agreement among owners of patents in the United States and in Europe. It has been decided to organize a company of $1,000,000 capital to begin the making of electrolytic iron on a commercial scale. Plans comprehend establishing a plant in the United States with the daily capacity of 20 tons, securing the iron from scrap material. Swiss banking interests have agreed to subscribe three-fourths of the capital, the remaining to be raised in this country.

The parent company under the new arrangement is Electrolytic Iron, Inc., jointly owned by the French interests who have been developing an electrolytic process at Grenoble, Isére, France, and by Charles P. Perin, consulting engineer, New York, who has been independently developing methods of securing pure iron products by the electrolytic process from pyrite and pyrrhotite. Mr. Perin, whose headquarters are at 40 West Fortieth Street, New York, has been carrying on his negotiations through A. Boucher and A. Bouchayer.

Asbestos in 1923

Geological Survey reports show the sale in 1923 of only 310 net tons of domestic asbestos, valued at $24,826. While this is much larger than the amount of 1922, which was 67 tons valued at $10,120, it was far below the 1920 and 1921 figures of 1648 tons worth $678,231 in 1920 and 831 tons worth $336,968 in 1921. Arizona, California, Georgia and Maryland furnished the 1923 supply.

NEW CLEVELAND AUTOMATIC

Multiple Machine Featuring Simple Mechanical Movements and Accessibility of Cams and Adjustments

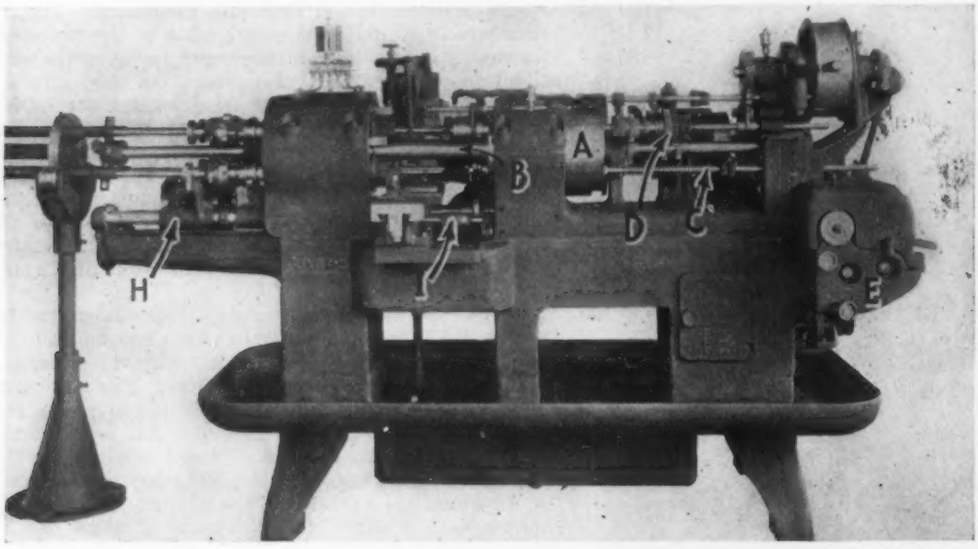
A multiple-spindle automatic screw machine of the same general design as its model A single-spindle machine has been placed on the market by the Cleveland Automatic Machine Co., Cleveland. Simplicity of all mechanical movements and accessibility of cams and adjustments, which are placed where they can be seen and reached with ease, are general features emphasized. The capacity of the machine is for ⅞ in. round, ¾ in. hexagon or ⅝ in. square stock.

In the new machine the turret and cross slide tools, excepting threading tools, are the same as in the single-spindle automatic, the location and style of cams being similar also. The tool turret, shown at *A* in Fig. 1 is of the company's regular design, being a heavy cast-iron cylinder mounted in a turret-head bearing and sliding on the center tube *B*. The latter is a hardened and ground steel tube, supported in a fixed bearing back of the turret and at the other end in the spindle cylinder. The first and second positions are in front, and the threading and accelerating spindles in the rear, which is intended to provide accessibility for setting up of box mills.

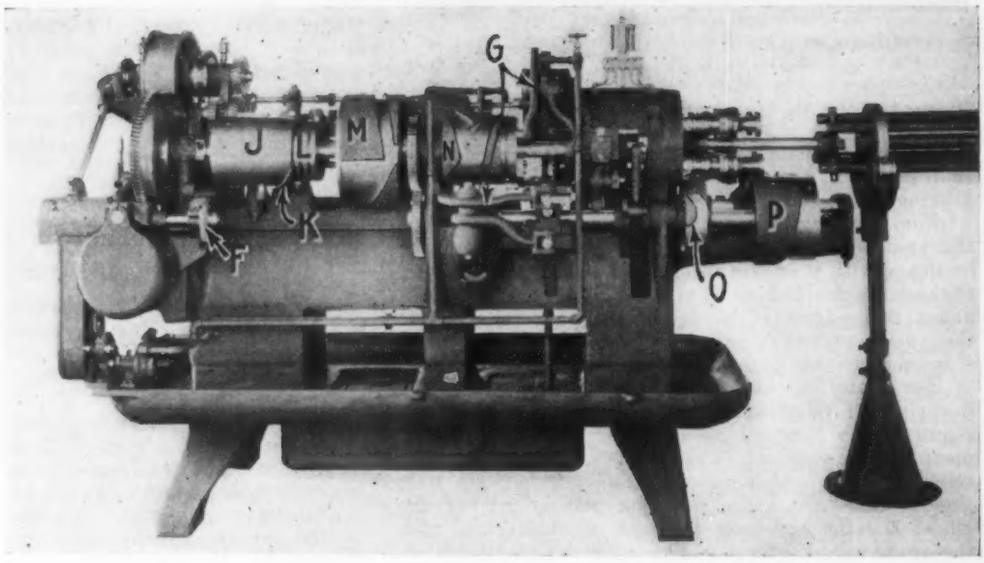
The independent tool spindle at the fourth position, permitting any tooling operation to be completed in that position before the other tools have finished their work, is an outstanding feature of the tool turret. The feed of this independent slide may be accelerated to greater or reduced to less than twice that of the tool turret. This tool spindle may be employed to ream or finish mill over the total length of the work, and will recede to make room for the cutting off tool, before the other tools have reached the end of their cutting strokes. The shaft shown at *C* is connected to the rear of this tool spindle and a lever operated from the cam shaft drum provides the independent movement. If this action is not required the stop collar on the rod may be disconnected and the spindle clamped in the turret.

The third position in the tool turret is fitted with a revolving die spindle which is driven from the center shaft by gears shown at *D*. Two selective threading speeds are available and a clutch provides increased speed for backing out a tap or solid die. A neutral position is provided for the driving clutch, and if threading is not required the die spindle may be clamped in the turret and another tool used in this position.

The front spindle bearings are bronze sleeves attached to the spindles running in adjustable hardened and ground steel bearings. The rear spindles are similar, but without adjustment. Spindle end-thrust is taken on ball-bearings at the front of the rear spindle bearings, with adjusting nuts at the rear end of the spindle. The drive to the spindle is from the center shaft by means of hardened steel helical gears. Change gears provide seven speeds and there are ten feed changes to each spindle speed. A new type of compres-



New Cleveland Multiple Spindle Automatic. The capacity is for ⅞-in. bar stock. The design is along the lines of the company's model A single-spindle units. An important feature of the tool turret is the independent tool spindle at the fourth position. By means of this any tooling operation may be performed and finished before the other tools have finished their work



The Chips and Cutting Oil Drop Down Through the Bed Into the Pan and Do Not Interfere With the Mechanism. Cams of different pitch and length can be used on the turret drum for various lengths of pieces. The maximum milling length is 5 in. Work up to 7 in. can be performed where the milling stroke does not exceed 3½ in.

sion collar and balanced chuck-operating finger is employed. The chuck opening and closing slide is operated directly from the cam shaft without levers. A guard covering each chuck hood serves to protect the hood and prevent cutting oil from flying when operating at high speeds. The indexing mechanism consists of a Geneva movement engaging the cylinder between the spindle bearings. The lock is a heavy flat wedge operated by the indexing arm.

Tool Feed Mechanism

Gears in the box shown at *E* provide ten feed changes, any one of which is instantly available. The speed of the idle movements is constant. The feed is driven by the center shaft through gears shown at *F*, Fig. 2, an arrangement permitting the selected feed per revolution of the spindle to remain constant at any spindle speed. Trip pins on the worm wheel control the idle movement and working feeds. Three cross slides, roughing and finishing forming slides, are provided, a fourth slide being also available as an attachment. The spindle cylinder is provided with individual cross slide stops for each spindle. The method of operating the cross slides may be noted from Fig. 2, *G*. Each slide has its own cam and may be moved to work in any position of the turret.

The feed tubes are operated by two slides, one shown at *H*, Fig. 1, and the other to the right of it, these being controlled from the camshaft without intervening levers. The camming is arranged so that the tubes will be picked up by the feed slide regardless of their longitudinal position. Spring action is employed for feeding the stock. The gage stock *I* swings up to meet the stock as it feeds out and then drops out of the way.

The cam shaft is located the same as in the single-spindle machines. In the event of interference or overload on any of the cam movements, the shearing of a pin provided in the worm wheel serves to stop the tool turret and cross slides. The cam controls may be noted from the rear view illustration, Fig. 2, as follows: *J* controls independent fourth position tool slide, *K* controls threading spindle, *L* controls clutch for increasing or decreasing speed of threading spindle and *M* controls tool turret. Cross slide cams are shown at *N*, chuck operating cams at *O* and stock feed slide cams at *P*.

Cams of different pitch and length may be employed on the turret drum for various lengths of pieces. The maximum milling length is 5 in. Where the milling stroke does not exceed 3½ in., work up to 7 in. may be machined. The diameter of the turret holes is 1¼ in., and the cross slide center height is 2¼ in. Chips and cutting oil drop through the bed into the pan without interfering with the mechanism. A motor drive arrangement is available, the motor, a 5 hp. 1750 r.p.m. motor, being carried on a base bolted to the bed arm.

The spindle speeds range from 450 to 1250 r.p.m. The pulley is 22 in. in diameter and the driving belt 3 in. wide. The floor space occupied by the machine is 36 x 96 in. The weight, with countershaft, is 4700 lb.

April Imports of Pig Iron and Other Materials

A statement issued by the Bureau of Foreign and Domestic Commerce, Washington, shows the sources of our April imports on pig iron, iron and steel scrap, ferromanganese, ferrosilicon and manganese ores, in gross tons, in accordance with the following table:

Countries	Pig Iron	Scrap	Ferromanganese	Ferrosilicon	Manganese Ores
Belgium	100	....	....	....	....
France	4,204	186	16	13	....
Germany	704	492	5	....	16
Netherlands	500	983	....	....	....
Norway	....	....	....	257	....
Sweden	26	....	....	24	....
Switzerland	....	....	....	23	....
Turkey in Europe	....	....	....	....	11,437
England	1,700	....	6,045	....	....
Scotland	1,286	1,000	....	....	....
Canada	4,851	1,988	....	939	....
Cuba	....	2,250	....	....	2,037
Brazil	....	....	....	....	3,108
British India	3,800	....	....	....	7,618
China	....	....	....	50	....
British West Africa	....	....	....	....	5,513
Bermuda	....	1	....	....	....
Total—					
Quantities	17,171	6,900	6,066	1,306	29,729
Values	$327,720	$100,533	$505,466	$142,029	$600,663

Metal Strapping of Freight Containers

In one year 40,000,000 containers had to be repaired in transit. This fact was established by a study of less-than-carload freight made by the freight container bureau of the American Railway Association. At twelve western cities 43,000 containers required recoopering during the one month of January, 1924, before they could even be started on their journey, and 6700 containers were in such poor condition that they had to be rejected for transportation.

That faulty packing and containers are costing the railroads $11,500,000 yearly is the conclusion required by a critical inspection at destination of several hundred cars of miscellaneous merchandise. Moreover, the Forest Products Laboratory of the United States Government estimates the economic loss to the nation from the use of unsuitable and unscientifically designed containers at $500,000 a day.

During the present month the transportation companies, with the cooperation of the Department of Commerce, are making a special effort to bring to the attention of shippers and receivers one of the things that can be done to stop some of this needless waste, viz., the metal strapping of packages. The advantages of this form of package reinforcement are explained in circulars issued by the Committee on Freight Claim Prevention of the American Railways Association, 431 South Dearborn Street, Chicago.

A nailing chart, covering the proper nailing of shipping cases according to the Department of Commerce, may be obtained from the National Association of Box Manufacturers, 844 Rush Street, Chicago. Several hundred tests made by the Government at its Forest Products Laboratory prove that proper nailing is a factor of vital importance in container efficiency, also that cement-coated nails, which cost on an average 10 per cent less than uncoated nails, have a much greater holding power.

Production of Mercury

Geological Survey reports show a production of 7937 flasks (75 lb. each) of mercury in 1923, compared with 6375 flasks in 1922. The value of the 1923 output is given as $521,302, or an average of $65.68 per flask or 87.6c. per lb. The 1922 value was $368,348, or an average of $57.78 per flask or 77c. per lb. The 1923 production came from 14 mines, nine being in California and the others in Texas, Nevada, Oregon and Idaho. The total amount of ore treated was 50,796 net tons.

Attention is called to the possibility that the demand may be largely increased if the new mercury boiler, designed by W. L. R. Emmet of the General Electric Co., should become popular. In this case it is believed that a large part of the mercury needed for such purpose would have to be imported, as the American deposits do not appear adequate to supply it all.

The Dominion Alloy Steel Corporation, Sarnia, Ont., is making good progress in getting its site ready for the erection of the first unit of its plant to be constructed there at a cost of $3,000,000. Sewers, water mains and spur lines are being constructed. It is expected that by the end of the week the water mains will be completed, when foundation work on the plant will be started. The plant will be constructed in three units; the first will be a sheet mill with a capacity of 30,000 tons per annum.

Double-Spindle Polishing Lathe

Distinctive features are claimed for the ball-bearing double-spindle polishing lathe shown in the accompanying illustrations, which is a recent addition to the line of the Gardner Machine Co., Beloit, Wis. In designing the machine, which is designated as the No. 3D, it was the aim to secure suitable wheel speeds for buffing or polishing in a direct-connected motor driven polishing lathe and to provide for independent operation of each end of the spindle as well as means for operating the two ends of the spindle at different speeds when desired.

A standard motor is mounted on a bracket which is part of the base casting, as shown, each spindle end of the machine being driven by belts from pulleys on the motor shaft. The speed of the spindles is varied by varying the size of the motor pulleys. Two spindles running end to end and each carrying tight and loose pulleys are provided for independent operation of each end of the machine. The driving belt at either side of the machine may be thrown into off position by means of the belt shifter and either spindle end stopped for wheel change.

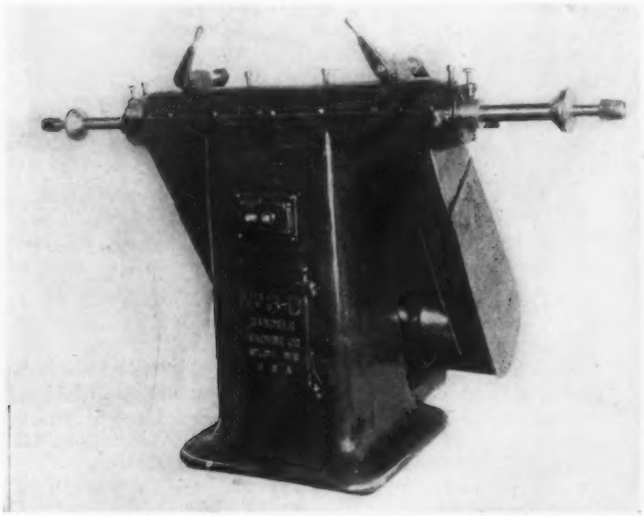
The spindles are of steel and are ground to assure proper running balance. They are mounted in ball bearings which are inclosed in dust proof housings. The upper halves or caps for the housings are in two pieces, accurately fitted at the center. This design is intended to provide maximum support to the spindles without projections to interfere with wheel clearance. The housings are provided with lubrication chambers, these being amply large and requiring replenishing only at infrequent intervals. The company's standard features of housing construction, including lubrication chamber drain and elevated double capped oil hole, are incorporated.

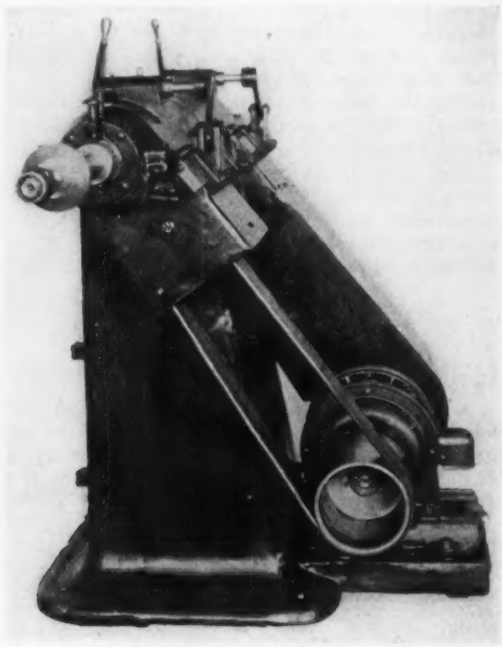
Hardened steel safety spindle nuts are provided and the motor driven machine is equipped with a spindle locking device. In this a button-head pin acting over a coil spring is pushed down into one of four holes in the spindle collar. This serves to lock the spindle when wheels are to be changed.

The center distance between motor pulley and spindle is approximately 35 in. The belts operate at an angle as shown, this being regarded as more efficient than applying the motor directly under the spindle. The sliding belt shifter is built into the machine. The upper part of each belt guard is an integral part of the base casting and is of cast iron. The lower part of the guard is of sheet metal.

Any standard 5-hp. 1700-1800 r.p.m. motor is recommended. The motor is started and stopped by means of the push button switch shown on the front of the pedestal. The control apparatus is mounted inside of the base, making the machine self contained and assuring protection for the control apparatus.

A belt driven machine is also available, having the same general features of independent operation for the wheels, simply by equipping the lineshaft with pulleys of suitable diameters. The construction of the belt-driven machine duplicates that of the motor driven unit, except that the necessity of belting upward from the spindle pulleys requires a different bearing cap design.





Motor-Driven Double-Spindle Polishing Lathe. Provision has been made for independent operation of each spindle end of the machine, each end being operated at a different speed if desired. The motor drive arrangement may be noted from end view at right

Manufacture of Crucibles in 1923

Census Bureau figures show 13 establishments engaged in 1923 in making graphite and clay crucibles and retorts and glass house pots. A total of 614 persons were engaged in the industry, which had a product valued at $3,467,816, compared with $1,969,930 in 1921 from 17 establishments. The 98 salaried employees received $359,531, compared with $370,545 received in 1921 by 92 salaried employees. The 516 wage earners (average number) received $626,678, compared with $495,973 received by the 412 wage earners in 1921.

Two-thirds the value of the products were graphite crucibles and retorts, with $2,312,739, or just double the 1921 amount. Clay crucibles and glass house pots amounted to $631,464, while other products aggregated $523,613.

To Make Electrolytic Iron in Italy

To manufacture electrolytic iron in Milan, Italy, Renée La Prêstre has incorporated a company in association with a number of Italian engineers prominent in business affairs. A representative of Charles P. Perin, New York, who has been actively interested for some years in procuring iron electrolytically without recourse to pyrometallurgy, assisted in the depositing on the anode of the electrolytic apparatus, tubes of electrolytic iron. These have been fashioned into weldless gas containers, both ends being spun into inverted dished heads, one to hold, say, a pressure gage and the other threaded for the controlling valve.

Automatic Combination Blanking and Edging Press

A combination blanking and edging press, for use in the manufacture of body sections for tubs, pails and similar articles and incorporating labor saving features has been placed on the market by the Max Ams Machine Co., 101 Park Avenue, New York. Front and rear view illustrations of the press, which is designated as the No. 403, are shown herewith. The machine illustrated is equipped for blanking and forming body sections for tubs and pails in successive operations, but with other equipment the machine may be employed for similar operations on other work.

Only one operator is required, the metal sheet being placed on the feed table against the back gage, after which the action is entirely automatic. A sheet as large as 72 x 27 in. may be fed into the machine, the press illustrated making six blanks from a sheet of this size. In addition to labor saved, the machine provides safer operation by eliminating the hazard incident to feeding the work directly into the die.

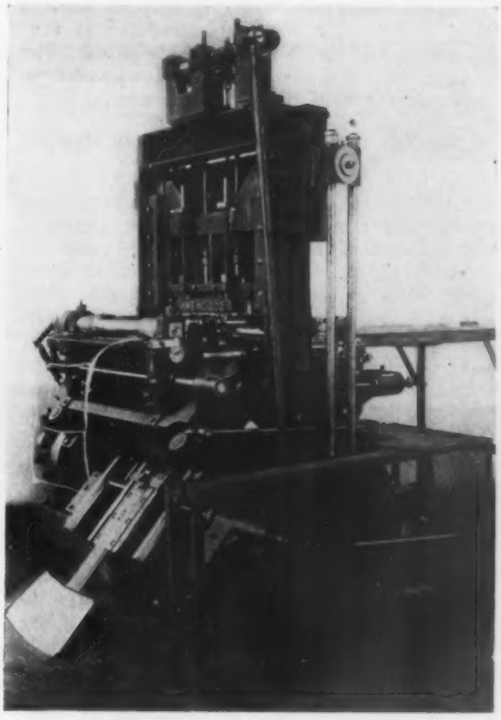
The machine is made up of an upright blanking press and a 45 deg. inclined forming press, both of which receive their reciprocating motion from the same shaft. Twin gears equipped with eccentrics drive the blanking press crosshead, the forming press slide being actuated by pitmans and cranks inside the housings. The machine is double back geared and is equipped with the company's friction clutch, which is controlled by two hand levers. The initial drive may be by belt or by direct connected motor.

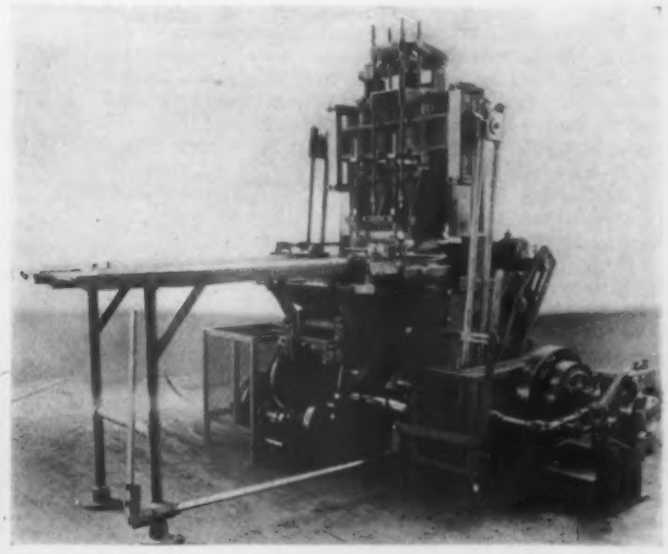
After the sheet has been placed upon the feed table and against the back gage, it is brought forward automatically into the path of the gripper feed at the proper time, which in the press illustrated is every sixth stroke. The grippers deliver the sheet to the blanking die, spacing it accurately. When the last blank has been cut the scrap is ejected from the rear of the machine by means of rollers, as shown in the rear view illustration.

The blank having been cut, it is pushed through the blanking die to an inclining device, which holds the blank by means of suction cups and swings it to a 45 deg. incline in alinement with the top of the forming die. The blank is then taken from the inclining device and delivered to the forming die by means of a reciprocating feed slide at right angles to the forming press. When the forming operation has been completed the work is ejected from the forming die. The vacuum pump used for operating the suction cups is connected directly to the machine. The feeds are arranged so that the sheets are spaced accurately while the blanks are being cut, and the blanks are positively delivered to and registered at the forming die.

A sample of the work done may be noted in the rear view illustration, the finished work being shown as it is ejected from the forming die. The close limits to which sheets may be cut, leaving a margin of only ⅛ in. of the scrap is a feature emphasized. The scrap as it comes from the rolls may be also noted in the rear view illustration.

The output is about 35 blanks per min. The machine weighs approximately 17,000 lb.





Combined Blanking and Edging Press for Use in Manufacture of Body Sections for Tubs and Pails. Metal sheets are placed against the back gage on the feed table, after which the action is completely automatic. Sheets as large as 27 x 72 in. may be fed into the machine. Scrap coming from the rolls and the ejected blank may be seen from rear view at the left

American Institute to Hold Exposition of Inventions

An exposition of inventions is to be held, Dec. 8 to 13 inclusive, in the Engineering Societies Building, 29 West Thirty-ninth Street, New York. The American Institute of the City of New York, 47 West Thirty-fourth Street, is handling the display through its inventors' section. A feature of the exposition will be exhibits showing developments of various machines, utilities and processing methods.

Among inventions now used throughout the world that were first displayed to the public at fairs of the institute are the Morse telegraph, the Hoe printing press, the McCormick reaper, the Howe sewing machine, the Bell telephone, the Colt revolver and the Francis metallic lifeboat. Annual fairs of the institute were begun in 1828.

The Canadian department of customs has issued the following ruling: Ruled that no cold-drawn steel is to be entered as shafting, and a declaration to that effect is to be placed on the entry. Cold-drawn iron or steel ⅜-in. in diameter or over, and not in coil, is not considered to be wire.

Basic Production Falls Off Sharply

April and May Show Heavy Drop Compared with the High Peak of March—May Still 12 Per Cent Above 1919 Average

BY SIDNEY G. KOON

ON the basis of preliminary estimates in some of the items of the volume of production in ten basic industries, the figure for May is the lowest for 1924 to date. Compared with May of last year, which was the highest record we have ever known, the falling off has been about 15 per cent. That it is not more is due in large measure to the continuance of an unprecedented amount of building construction and of high automobile production. Lumber also has been cut in great quantities, accounted for largely by the demands of the building industry, and non-ferrous metals have been turned out in heavy volume. While there has been a slump in the production of pig iron and of steel, the low spots have been textiles and leather, neither of which has been up to the 1919 average since January.

Present conditions are somewhat uncertain, due to the history of the first quarter of the year. Following a decline in November and December from the high level reached earlier in the fall, there had been a rapid gain, both in general production and in the production of pig iron, culminating in March. The index of production in that month was more than 124—that is, 24 per cent above the average month of 1919. In pig iron the peak was still higher at 33½ per cent above 1919. Then came a sharp drop, with a loss of pig iron production in May the greatest ever recorded in a single month, and other items sharing in the curtailment. Indications are not wanting that the bottom of the present movement is in sight, although as yet it may not have been reached.

Purchasing Power at Home Relied on to Absorb Large Output of Industries

With the continuance of high wages and a good measure of employment in nearly all major industries, the purchasing power of the American people remains high. It has been shown in recent analyses of wages and cost of living that the purchasing value of present day wages is 32 per cent above the purchasing power of the wages received ten years ago. It is largely this factor that has sustained the manufacturing activity of the country in its great output of the past 15 months. Foreign business, while important, has been but the proverbial drop in the bucket, partly because of the heavily depleted purchasing power of European, Asiatic and Latin-American peoples, but also because of the lack of attention paid to foreign markets by American manufacturers when they were hard put to it to keep up with orders in domestic markets.

As has been the case in previous reviews on this subject, which have appeared at intervals during the past two years, the curve of production is based on quantity, without reference to prices. Dollars do not enter into it at all. No attempt is made to use a seasonal factor to smooth out the curve, nor is correction made for differing lengths of months. Both these items account for some of the local inequalities month by month, but do not affect the general result. Twenty-one separate items are used in the analysis, in ten groups as follows:

1. Food; beef, flour and sugar.
2. Building construction.
3. Textiles; cotton and wool.
4. Fuel; anthracite and bituminous coal and petroleum.
5. Vehicles; automobiles and trucks.
6. Leather; belting and sole leather.
7. Lumber; yellow pine, Douglas fir and Northern hardwood.
8. Steel ingots.
9. Non-ferrous metals; copper, lead and zinc.
10. Newsprint paper.

All figures are expressed in their relation to the average monthly output of the calendar year 1919. Each unit entering into the curve represents an element of production, although in some instances, as in textiles, it is a measure of consumption of the mills. The separate items under each group are averaged and then the direct average taken of the ten group figures.

Influence of Steadily Increasing Population on Demand for Production

Studying the principal curve accompanying this article, which gives a history of about 4½ years of activity along the lines dealt with, we find only 14 months above the 110 per cent line. Only one of these months precedes March, 1923, this being March, 1920, at about 116. In the 15 months since February, 1923, however, we find four above 120, with the figure for May, 1923, at 129, the highest of all. A portion of the increase within the past year must certainly be credited to the larger population of the country—a population which is growing at the rate of perhaps 1,700,000 per year.

Compared with 1920, for instance, there are fully 6,500,000 more people here whose needs must be satisfied and this added buying public, representing 6 per cent of the figure of four years ago, would normally account for about 6 per cent increase in production. No attempt has been made in plotting the curve to allow for this. It might be said, however, that if account is taken of it, our 124 for March becomes 117, while our 112 for May represents really about 105, or scarcely above the average figure established five years ago. The influence of this factor may be visualized by comparing the curve of production with the dot-and-dash line labeled "level of increasing population."

Making Up the Deficit in Production of Earlier Years and Restocking Dealers' Supplies

Much has been said during the past few years about the depletion of dealers' shelves. No definite analysis has been made, but it has come to be regarded as a fact that stocks of goods, in the hands of both wholesalers and retailers, have averaged considerably less since 1920 than at that time. In view of the remarkably short production of 1921, a year estimated at about 75 per cent of normal, the shelves were cleared of much that had accumulated.

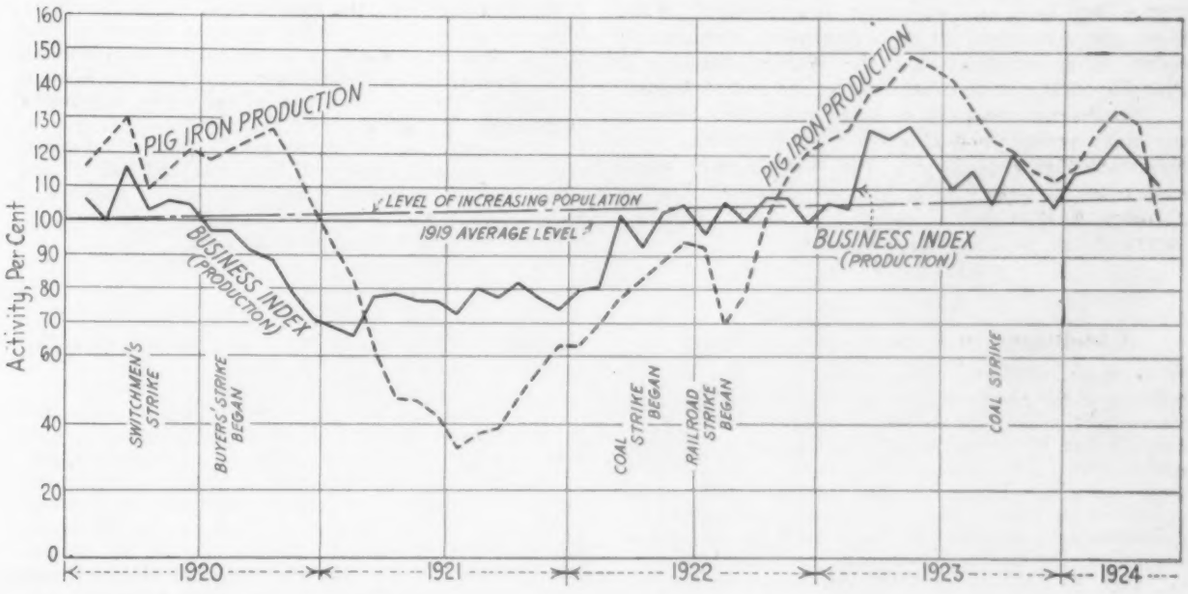
Considering the years in our diagram as units, production of 1920 appears to have been about 96.5 per cent of the 1919 total. In 1921 the figure dropped to 75.75 per cent. In 1922 it became almost normal again at 99.8 per cent. In 1923 it reached the high average of 115 per cent, while for the five elapsed months of 1924 it has been still higher, at 117.4 per cent, in spite of the sharp dropping off in April and May.

Modifying these estimates by the progressive increase of population, we may place 1920 at 95 per cent, 1921 at 74 per cent, 1922 at 96 per cent, 1923 at 110 per cent, and the five months of 1924 at 110½ per cent. Apparently, therefore, there was a deficiency of production in 1921 of 26 per cent, with 4 per cent in 1922, which has been made up in part by a 10 per cent increase in 1923 and 5 per cent (the five months proportion of the total in 1924) or a total of 15 per cent. It is evident that this excess production of the past year and a half has about half offset the accumulated deficiency of 1921 and 1922.

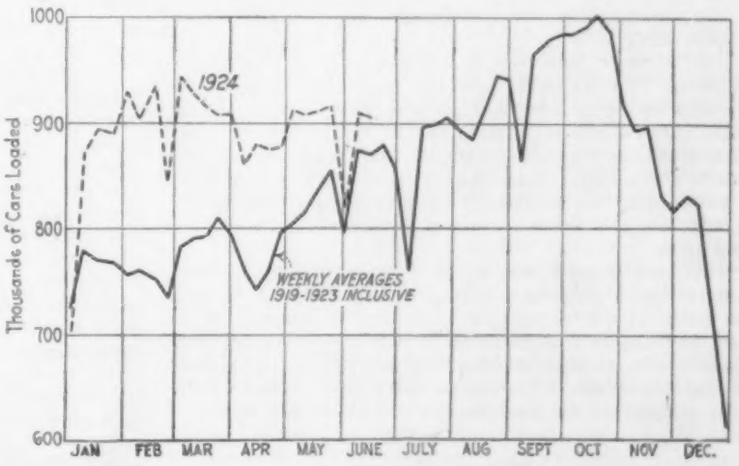
We may take the view that this deficiency never will be made up, because of our having worried along with a smaller satisfaction of demand than previously. On the other hand it might be considered that, as we have made up only a portion of the deficiency, the remainder will be taken care of in good time, as dealers' shelves gradually become more heavily stocked.

Much has been heard recently of "hand-to-mouth buying." A sustained high level of shipments in less full two years, even when account is taken of the continually mounting population which has to be served by it.

Predictions for the immediate future show some variations. For the long term, however, it is reasonable to expect, on the basis of facts now known, that production will continue at a high rate, because of the continuing demand of a population able to pay for what it wants, and of a people whose standards continually



PRODUCTIVE Activity in the United States Has Maintained for Fifteen Months a Higher Average Level Than Has Ever Before Been Reached. As always, the curve of activity of such a basic commodity as pig iron shows fluctuations much greater than with manufactured products in general. It is noteworthy that, until the present sharp drop, pig iron has indicated a higher level, for more than 18 months, than the average



Weekly Car Loadings, While Now Below Those of Last Year, Are Consistently Above the Five-Year Post-War Average. They form one indication of the dimensions of our present activity

than carload lots, as reported by the railroads, reflects the importance of this item. It lends further strength to the theory that the condition at present may be regarded as not unsatisfactory, in that the shelves of dealers still require a considerable amount of stock to bring them to a normal point. In May and June these were signs of diminished consumption in some lines, including the metal trades, but the tendency has not been marked. In New York State, payrolls in the manufacturing industries were nearly 10 per cent less than they had been two months beforehand, a little more than 10 per cent below those of May, 1923.

Production Should Continue Heavy So Long as Consumers Can Pay for What They Want

Most indications are in the direction of continuing heavy production seeing that purchasing power is not badly depleted. Reference to the chart shows that in spite of bad spots, of which the present admittedly is one, production has been near to or above normal for a

are being elevated as more and more things are developed which they find useful in their daily lives. Typical among these items may be mentioned the steadily increasing use of the automobile, the number of units now actually exceeding the number of telephone instruments in the United States. Replacement alone, on the basis of the seven-year life now estimated as normal for these vehicles, will call for a larger yearly production than had ever been reached previous to 1922. This does not take account of extending uses in business or other ways.

Consequently it is not improbable that production in general, during the next two or three years, will average not far from the 110 per cent line as compared with the 1919 level. Three years from now 110 per cent of the 1919 production will be just about in proportion to the gain in population since that time. Hence, production at that rate would be no more than normal, assuming that 1919 represents in a production sense a normal year.

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Stockholders of Warren Foundry & Pipe Co. Vote to Sell Stock to Replogle Steel Co. for $4,000,000

At a recent meeting of stockholders of the Warren Foundry & Pipe Co., Phillipsburg, N. J., it was voted to give an option on the stock of the company to the Replogle Steel Co. The price agreed upon with the Replogle company is $400 a share and the total amount about $4,000,000. It is stated that a bond of $50,000 has been deposited by the Replogle Steel Co. with a local bank as a guarantee of good faith. While there are understood to be a few minor obstacles, it seems to be expected that the Warren Foundry & Pipe Co. plant will be taken over by the end of August.

The Warren company employs more than 600 and the plant covers about 21 acres at Phillipsburg. It is estimated that acquisition of the Warren plant would absorb the tonnage of one Replogle furnace. Warren Foundry & Pipe Co. is one of the largest manufacturers of cast iron pipe in the North.

Conditions in Brass Goods Industry

Business conditions were touched on in the summer meeting of the National Association of Brass Manufacturers, held at the Colonial Hotel, Mount Clemens, Mich., June 12 and 13. A majority of the members reported working with full forces and full time, with several of them working overtime. The average daily wage proved to be $5.04. Easier labor conditions were reported than for 60 days previous. As to the number of hours operated weekly, the figures ran from 46½ to 60 hr., with an average of 53½. The majority also reported doing a greater volume of business in the first four months of 1924 than in the same period of 1923; some reported the amount to be the same and a few that it was less.

A number believed that copper prices would go higher. The majority, however, held that they would remain at the present level; a few were of the opinion that they would go down. As to finished goods, the majority expressed the opinion that prices would remain stationary. Bookings appear to average nearly two months output and collection experiences were divided between those reporting good and those reporting fair.

A color scheme was adopted for wrapping faucets, each color to indicate a definite quality. It was decided to issue an official catalog. The financial condition of the association was reported by Commissioner William M. Webster, whose headquarters are at 1809 City Hall Square Building, Chicago, as being on a sound basis. The association decided to meet in Cleveland Sept. 17 and 18.

Increased Scrap Rates Suspended

Proposed increases in freight rates on scrap iron and steel from Texas points to northern destinations have been suspended by the Interstate Commerce Commission as a result of action taken by the Scrap Steel Consumers and Shippers' Conference. The rate advances, as provided for in Supplement 34 to I. C. C. No. 1587, filed by F. A. Leland, agent of the Southwestern Tariff Bureau, were to become effective June 25, and affected shipments of scrap iron and steel from all Texas points to the North. To St. Louis and Kansas City the proposed increase was 5½c. per 100 lb., while to Chicago, Peoria, Milwaukee, Omaha and Davenport it amounted to 6½c. per 100 lb.

The petition for the suspension of the tariff was filed by the Scrap Steel Consumers and Shippers' Conference through its secretary, A. L. Dreher, traffic manager Hyman-Michaels Co., Peoples Gas Building, Chicago. The operation of the tariff has been suspended until Oct. 23, unless otherwise ordered by the Interstate Commerce Commission. Meanwhile, the traffic committee of the conference, as well as various traffic managers of member companies, are preparing elaborate data for presentation to the commission to show not only that the proposed increases are not in order, but that rates should be lower rather than higher. Besides Mr. Dreher, the members of the traffic committee are as follows: R. K. Keas, traffic manager LaClede Steel Co., St. Louis; W. J. Hammond, assistant traffic manager Inland Steel Co., Chicago; and J. J. Low, manager freight rate department Briggs & Turivas, Chicago. Others actively participating in the preparation of the case are J. C. Fox, traffic manager Highland Iron & Steel Co., Terre Haute, Ind., and R. Z. Eaton, traffic manager Keystone Steel & Wire Co., Peoria, Ill., who are members of the advisory committee of the conference, and R. H. Nathan, Dallas, Tex., who is chairman of the scrap consumers' organization for the State of Texas.

The Scrap Steel Consumers and Shippers' Conference was recently organized by producers, dealers and consumers of scrap iron and steel for the purpose of mutual aid in rate and allied matters. The membership already comprises 100 companies.

Proposed Changes in Iron and Steel Rates Not Justified

WASHINGTON, July 1.—Dealing with suspended rates on many iron and steel products between Central Freight Association and Trunk Line territory, proposing increases and decreases between points in the Pittsburgh district and adjacent territory in Pennsylvania, New York, Ohio, West Virginia and Maryland, the Interstate Commerce Commission in an opinion just announced, held that the proposed changes were not justified. It ordered the suspended schedules cancelled and discontinued the proceeding without prejudice to the filing of new schedules in conformity with the views expressed in the findings. Many iron and steel interests participated in the case.

It had been proposed by the railroads to make an increase, with some exceptions, of 15.8 per cent in the rates and to change their relationship. There were a number of reductions suggested, but they were exceeded by attempted advances. Commissioner Meyer, who prepared the opinion, said that the key rates between Pittsburgh and Youngstown and between Youngstown and Cleveland would be increased 15.8 per cent and would amount to about 66 per cent of the class rates. The existing rates are about 57 per cent of the class rates between the so-called key points. The more notable increases above 15.8 per cent were proposed in the comparatively large number of instances in which class rates were named in lieu of the present commodity rates for so-called long hauls. The schedules also proposed increased joint rail-lake and rail rates to Western destinations. It was roughly estimated that the proposed rates would result in a net increase in transportation costs on all traffic in the affected territory of $750,000 to $1,000,000 annually. In suggesting the filing of new schedules, the commission said that some increase in "some of the rates for which class rates are proposed to be substituted may be proper."

Iron and Steel Rates Declared Unreasonable

WASHINGTON, July 1.—The Interstate Commerce Commission has just handed down an opinion in the American Shipbuilding Co. case in which it holds that rates on iron and steel products from Pittsburgh and other points in western Pennsylvania to Cleveland, Lorain, Canton and Akron, Ohio, are unreasonable to the extent that they exceed contemporaneous aggregates of intermediate rates over the routes of movement. In addition to the American Shipbuilding Co. complainants included machinery and iron and steel makers. The cases had been reopened after previous decisions affecting other points in nearby territory were rendered. The new rates will become effective Sept. 20.

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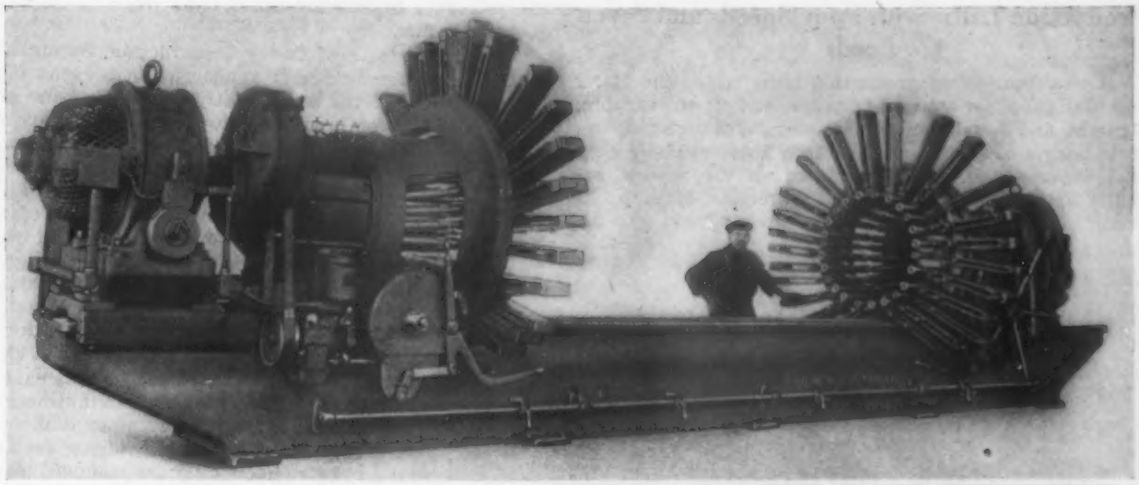
Large Double-Head Horizontal Multiple-Spindle Drilling Machine

The Baush Machine Tool Co., Springfield, Mass., has added to its line the heavy-duty high-speed multiple-spindle drilling machine illustrated herewith, which although adapted to heavy drilling generally is intended especially for drilling flanged pipe and similar work. The machine will carry 24 1-in. diameter drills or equivalent in each head and is rated as capable of driving the 48 drills through cast iron at the rate of 3 in. per min. Either round or rectangular heads may be furnished, the round heads ranging in size up to 36 in. in diameter and the rectangular heads up to 25 x 48 in. Smooth blending of outline, simplicity of operating mechanism and ease of control from either side of the spindle arms are features emphasized.



Heavy-Duty Horizontal Machine for Drilling Flanged Pipe and Similar Work. The capacity is for 24 1-in. drills in each head, 48 1-in. drills being said to be driven through cast iron at rate of 3 in. per min. Either round or rectangular heads may be used. Convenience of control is a feature

The bed is cast in one piece and is 29 ft. long, smaller beds being available as required. The weight of the machine illustrated is 18 tons. It is driven by two 27-hp. variable-speed motors mounted as shown, and direct-connected to the main driving gears in the head. The outer end of the motor shaft is supported in roller bearings. Each head can be equipped for fast approach and return although in the case of the machine illustrated only one head is so equipped. The fast approach and return is operated through a controller handle on the front of the head, which controls a small reversible motor on the back of the head, the controller lever being moved in the direction of travel desired. The small motor is equipped with a friction safety clutch so that the drills may be brought solidly against the work and the feed thrown in, an arrangement intended to eliminate loss of time due to drills being stopped short of the work. An interlocking device is provided to prevent throwing in the fast approach and return of the head until the feed worm is reversed and vice versa. Control boxes and the push button controls for starting and stopping the driving motors are conveniently located.

The feed box, which is of the rocker type, is integral with the spindle head. The feed is controlled conveniently from either of the two operating positions. The feed trip dogs are adjustable and are arranged to trip when overhanging the rod brackets.

The ribbing of the bed and heads to minimize vibration even when the machine is drilling at full capacity is said to have been given careful attention. The company's patented spindle arms used are said to permit centers of holes to be obtained practically equal to the diameter of the spindle, with ample spindle adjustment.

Machine Tool Sales Conference at Hartford

The eastern sales managers' conference held under the auspices of the National Machine Tool Builders' Association at Hartford, Conn., on June 24, discussed railroad purchasing agents, industry advertising, time sales, depreciation rates and reaching the financial executive. The following is an abstract of a report made by Ernest F. DuBrul, general manager of the association:

Railroad Purchasing Policy

Certain railroad purchasing agents compel suppliers to waste time and money waiting on the purchasing agent who tries his utmost to beat down prices. All industries supplying railroad wants are complaining of this. This policy creates resentment that finally will result in alienating sympathy from the railroads in their attempts to maintain their own freight rates. Suggestions were made as to the possibility of calling this fact to the attention of railroad executives.

Selling Production Not Pounds

Can we not advertise machine tools as productive units that increase the profit of the user, and thereby further the selling of production, not pounds? By general industry advertising can we not show up obsolete machinery as "profit eaters," and not "profit makers?" Can we not show that excessive service and engineering demanded by some few users of machine tools should be charged for separately and distinctly as an engineering fee and not be distributed over the price charged to users of machine tools who do not require such service and engineering? By advertising the recommendations of President Harding's committee on unemployment, can we not do something to persuade large users to regulate their buying, and not concentrate it in periods of activity, and do more buying in periods of business recession?

Machine Tool Credit Certificates Not Favored

A credit company proposes to carry paper covering machine tools sold on a basis of 20 per cent down, and other payments running as long as two years. Good credit practice would discourage this sort of buying. The percentage of recovery is very small on machine tools taken back when payments are defaulted. Incompetent handling of machines causes many complaints, and complaints regarding machines are easy excuses for defaulting. Besides this, there is the danger for the builder of assuming in a boom a lot of contingent liabilities which would fall on his neck as soon as the boom was over. We have no reason to believe that time payments would stimulate the purchase of machine tools in a depression any more than low prices have done.

Against Federal Tax Depreciation Ideas

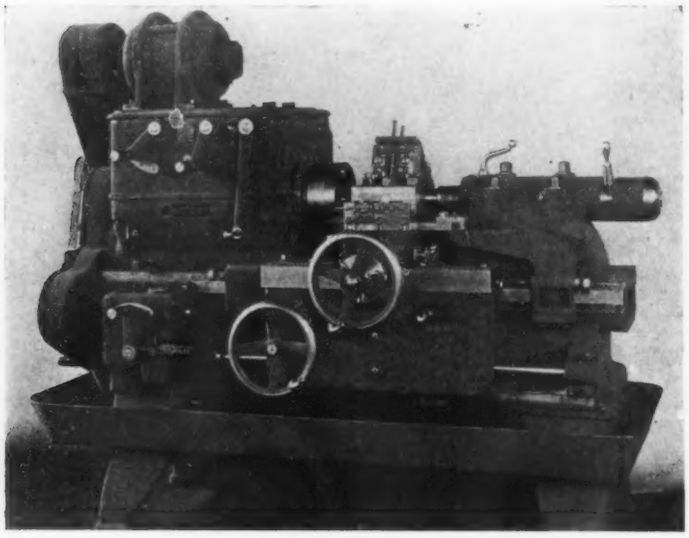
The Federal tax unit has in some cases allowed only 5 per cent depreciation on machine tool equipment, and

any rates set by the tax unit have an influence in the accounting practice of machine tool users. Since 5 per cent is in the experience of this industry an utterly inadequate amount, it would be desirable for the machinery using industries to arrange a conference with the tax unit to get depreciation rates on a more standard basis and one more in accord with physical facts.

Harry Tipper pointed out at the Buffalo meeting that the purchase of machine tools requires salesmanship that will reach the financial executive and not merely the mechanical executive of the user company. If the machine tool industry had a research program it would be of direct benefit to users. This fact could be used to give the industry a better standing with the financial executives of other industries. Other industries that can show such results are able to point to what they are doing for their customers as an industry and thereby increase the good will of the users for the suppliers' industry as a whole, with benefits accruing to the individual firms.

Production Lathe with Four Speeds and Seven Feeds

A new four-speed production lathe called the No. 2 and designed for straight, taper and form turning, straight and bevel facing, recessing, and straight and form boring of pieces entering into automotive or general manufacture has been placed on the market recently by the Reed-Prentice Co., Worcester, Mass.



New Four-Speed Production Lathe. The machine is entirely automatic in its cycle of operation, including control of diameters and lengths on the work. Driving gears to the spindle are of the herringbone type

Flexibility and ruggedness, adapting the machine for a variety of uses on both light and heavy work are general features claimed. The machine is entirely automatic in its cycle of operation, including the control of diameters and lengths on the work. All handles are centrally located to facilitate manipulation and to permit rapid loading of the work. Liberal use of hardened alloy steel parts and large bearing surfaces make for durability and continued accuracy, and smooth spindle operation is provided by the use of ball bearings and herringbone drive.

The general arrangement of the machine may be noted from the accompanying illustration. The headstock is of box construction, headstock gears are of hardened steel, and gear shafts in the headstock run in ball bearings. Driving gears to the spindle are of herringbone type. The spindle journals are hardened and ground and run in bronze bearings.

Four spindle speeds are obtainable through sliding gears positioned through crank handles located on the front of the headstock. The drive is through a disk clutch and brake located at the rear of the head and operated by a lever at the front of the headstock. The disk clutch and brake provide instantaneous starting and stopping. The headstock may be arranged with either belt or motor drive, the motors employed ranging in size from 5 to 20 hp., depending upon the class of work to be done.

Quick withdrawal of the tail center and fine adjustment of the center in the work is provided by the cam tailstock. This facilitates quick loading and a hand clamp serves to lock the tail spindle when the machine is in operation.

The carriage is of heavy construction throughout, and the carriage bridge is supported on a right-angle bearing inside of the bed, directly under the front tool holder. The apron is arranged with independent power longitudinal and cross feeds, both feeds being operated and tripped automatically in both directions. The direction of the feed is determined by the position of the hand lever projecting from the front of the apron. Changing from longitudinal to cross feed and vice versa is obtained by a pull gear, which is controlled from a handle protruding from the front of the apron. Operation of the automatic trips is simple, and with the use of positive bed and cross slide stops close accuracy in positioning of the tools is said to be obtained. The cross feed handwheel is equipped with a large micrometer dial.

The feed box regularly provided gives four feeds and by compounding the standard gears making up the end works three additional feeds may be obtained. Changes of the feed are obtained by means of hardened steel sliding gears operated by a crank handle at the front of the box.

Facing and chamfering operations are performed by means of the company's patented back arm attachment which is provided with sensitive worm adjustment for positioning the tools to the work. The attachment is of sturdy design, and has a long angular support bearing on the lower part of the bed.

Splash lubrication is employed for the headstock and a sight-feed oiler shows the level of the oil contained in the headstock. Apron bearings are lubricated from pipe connections to an oiler at the top of the carriage, a similar arrangement being used for lubricating the feed box bearings. Oil cups are employed for other bearings. Tool holders and drivers of various sizes and types for the work to which the machine is adapted are available.

De Mattia Brothers Plan Expansion

De Mattia Brothers, Garfield, N. J., plan the expansion of their various interests. The De Mattia Foundry & Machine Co. has been incorporated to continue operation of the foundry at Wellington Street and Getty Avenue in Clifton, where the new office of the organization will be maintained. This plant includes a modern foundry located on a large plot. The manufacture of gray iron and semi-steel castings will be continued and in addition the company will engage in the manufacture of staple lines of machinery.

De Mattia Brothers, Inc., will operate the machine shop located at River Road and Prescott Avenue in Garfield and will retain the present offices. Present lines of machinery and equipment for building automobile tires and molds for mechanical rubber goods will be continued along with additional lines of standard and special machinery for the rubber and allied industries.

Class I railroads in March paid $241,406,659 to 1,760,268 employees, an average of $137.14 each.

CONTENTS

July 3, 1924

New Butt Weld Mills at Indiana Harbor 1
Youngstown Sheet & Tube Co. Completes Part of Expansion Program Inaugurated at Its Western Plant—Mills Will Produce 400 Tons Daily

Reconstructing Plant Under Production 5
Powdered Coal Air Furnaces with Water System for Disintegrating Slag, Continuous Annealing Oven and Molding Floor Arrangement

Basic Production Falls Off Sharply 22
April and May Show Heavy Drop Compared with the High Peak of March—May Still 12 Per Cent Above 1919 Average

June Pig Iron Output Lower 34
Decrease from May Was 16,817 Gross Tons Per Day—Net Loss of 20 Furnaces

Symposium on Alloys Resistant to Deterioration 11

Problems in Wrought and Cast Iron 14

Magnetic Analysis and Fatigue of Metals 15

European Conditions Improving Slowly 32

Chief of Newly Created Minerals Division 17
To Make Electrolytic Iron in America... 17
Metal Strapping of Freight Containers.. 19
To Make Electrolytic Iron in Italy..... 20
To Hold Exposition of Inventions..... 21
Iron and Steel and Scrap Freight Rates.. 24
Ore Bridges Destroyed at Lorain..... 30
First Coke from Clairton Ovens..... 30
New York Export Market..... 31
Automobile Hydraulic Drive..... 31
Japan Adopts New Tariff Policy..... 33
Receivers for J. L. Mott Iron Works... 48
Puddlers' Wages Reduced..... 48
Freight Rate Case Argued..... 54
Steel and Industrial Stocks..... 65

NEW EQUIPMENT

27-In. Engine Lathe..... 10
Gage for Protecting Cutting Diamonds.. 16
Speed Reducing Face Plate..... 17
Cleveland Automatic 18
Double-Spindle Polishing Lathe..... 20
Automatic Blanking and Edging Press.. 21
Double-Head Multiple-Spindle Drill..... 25
Lathe with Four Speeds and Seven Feeds. 26

STATISTICAL

Asbestos in 1923..... 17
April Imports of Iron and Other Materials 19
Production of Mercury 19
Manufacture of Crucibles in 1923..... 20
German Exports and Imports..... 33
Sheet Business Declines in May..... 52

MEETINGS

Conference on Human Relations..... 4
American Society for Testing Materials.. 11
New England Iron and Hardware Association 16
National Association of Brass Manufacturers 24
Machine Tool Sales Conference..... 25

Iron and Steel Markets.....36
Comparison of Prices.....37
Prices f.o.b. Pittsburgh.....50
Prices of Raw Materials, etc....51
Non-Ferrous Metals.....52
New York Jobbers' Prices.....66
Editorials 28
Fabricated Steel Business.....49
Railroad Equipment Buying...49
Personal 53
Machinery Markets.....58

ESTABLISHED 1855

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The Eight-Hour Day in Germany

EVER since the armistice the greatest activity of the League of Nations, except perhaps the receivership for Austria, has been through its subsidiary, the International Labor Bureau, which was mainly responsible for the promotion of the eight-hour day throughout Europe, and thereby was contributory to the diminishing of production. At a recent meeting of an International Labor Conference in Geneva the demand was made that this bureau take steps to insure that the eight-hour day be respected in the application of the Dawes reparation plan, the reason for this appeal being that Germany has represented that longer working hours are necessary in order to meet the obligations of the expert's report. This request is equivalent to asking that Germany be so hampered by labor legislation that it can not earn enough to pay reparations or live up to the conditions of the Dawes plan. It is preposterous that such perversity of thought continues to exist at this late date.

We are not against the eight-hour day in principle nor necessarily against the six-hour day—although while so short a day might be justified economically if people were able to earn their living thereby, there might be sociological reasons that would make it objectionable. But the evidence is accumulative and positive that no one of the civilized nations of the world is able to earn a good living by the work of only eight hours per day all around. Not even does the United States produce and obtain its present scale of living under such a condition. The average hours of work in a large part of our manufacturing industries is still more than eight hours per day, and in those which are on the eight-hour basis the latter is to a large extent only nominal, with a time limit that is an excuse for getting extra pay for overtime.

That the eight-hour day is bound to diminish production is so obvious that really there should be no argument respecting it. In a large part of our manufacturing it is machines that do the work and men merely watch the machines. The cotton loom keeps on weaving and the blast furnace keeps on smelting at a certain rate per hour without the exertion of any human energy. The output of a machine or a furnace is a direct function of time and is less in eight hours than in 10 hours. Consequently, if a nation decides to operate all of its machines for fewer hours it can not help curtailing production.

There are a good many phases of this complicated economic problem, but this simple statement of engineering principle is a pretty sound thing from which to start.

The Danger Line on Sulphur

IT will be remembered that the sulphur and phosphorus limits on most specifications for tonnage steels were increased 0.01 per cent during the war, on account of the difficulty in securing a sufficient quantity of low-sulphur fuel and melting stock. This was done not without trepidation, and most inspecting engineers felt that these higher limits constituted a distinct risk. But in war time every one had to take risks. As far as we know, however, no great epidemic of failures resulted. The final test of service is being successfully passed, as it has been by millions of tons of even higher sulphur and phosphorus steels bought when strict chemical specifications were not imposed.

It is agreed that 1 per cent sulphur would render steel absolutely useless. On the other hand, 0.01 per cent sulphur is the ideal of tool maker and ordnance expert. Somewhere in between these limits the element becomes dangerous. Where is that point? We confess we have more admiration for the type of mind that seeks an answer to this question than the one which says, "Let's avoid any increase on general principles; much sulphur is ruinous, therefore a little is bad."

In order to determine the effect of these two elements, when present in small quantities, a study of several grades of steel was organized by the American Society for Testing Materials over four years ago. Work on a series of rivet steels, ranging from 0.03 to 0.18 per cent sulphur, has been completed. Thousands of tests, of every variety popular today, have been made systematically by skilled observers and presented to the society in four voluminous reports.

The work having been done, it is unfortunate that the committee has not summarized the evidence and answered the question put to it. Even though the sulphur specification in rivet steel is back to the pre-war figure (namely, 0.045 per cent), the committee was organized primarily to

answer the question, "Is it safe to increase sulphur to 0.055 per cent in rivets?"

Despite the reticence of the committee, only one answer is found from a careful study of the results, namely: In well-made basic open-hearth steel containing less than 0.02 per cent phosphorus, approximately 0.11 per cent carbon and 0.43 per cent manganese, the maximum sulphur now allowed in rivets for structural steel (0.045 per cent) is at least 0.01 per cent below the quantity that will damage the metal, at least so far as its performance can be predicated on laboratory tests.

The committee's tests do not plot in smooth curves with increasing sulphur content. They vary enough from side to side to impress one with the fact that some unknown factor is causing more variation than is the sulphur. This unknown factor might be termed "quality." The tests show that it is undoubtedly easier to damage steel far more by careless steel mill practice or injudicious heating than by a point or two more sulphur. Consequently, *well-made steel* is the first consideration.

Without depreciating the usefulness of chemical analysis, it should be pointed out that it is but indirectly a check upon "quality" in steel. That granted, the question arises, "What is a good test for a quality rivet?" The committee has tried almost everything, from the old reliable tension test to the latest ideas on fatigue and high-power micrography. No recommendation is given as to what should be used for inspection or acceptance tests. Nevertheless any of the steels of this investigation containing less than 0.08 sulphur would pass any of the tests. Apparently what is needed now is a service test: get a large quantity of high-sulphur rivets into a fabricating shop and see how they drive. Any one of these heats which acts all right in the heating forge and under the pneumatic gun will hold after it is once driven.

New Alloys to Meet New Demands

LAST week's meeting of the American Society for Testing Materials was noteworthy for the many evidences it developed of the steady progress metallurgists have made in recent years on one of their major problems. We refer to the demand for metals and alloys that will stand up, not only against ordinary corrosion but under the new high-temperature conditions of various manufacturing processes.

Corrosion has long had a place on Testing Society programs. Much that is said in discussing it today was brought out in similar discussions years ago; but new conditions are constantly being met and these compel new measures. It is in heat resistance, however, that metallurgy has been finding each year a new challenge. With the designing of apparatus to utilize high-temperature steam at high pressure has come a demand for metals and alloys having sufficient resistance to such conditions. Another example is the making of steel that will serve for airplane valves where corrosion and strength at high temperatures are factors. The Atlantic City meeting shows that special alloy steels have played an important part in this connection. Attention was called also to the growing demand for special steels in new chemical operations, particularly in the cracking processes for petroleum products.

In many ways this work of the American Society for Testing Materials during the past year is epochal. Its committee, which conducted the symposium last week, has done a great service, particularly in the compilation of tables showing the composition and properties of 80 to 100 metals and alloys. Data have been correlated and discussed and a basis has been established for future development in this vastly important field. This effort well represents the possibilities of the society in its recently adopted plan of cooperation in research, supplementing its established work of formulating standard specifications.

Prices After Wars

DURING the World War no little thought was given to the question whether the course of business, as to activity, prices, etc., would or would not follow the course of affairs after our Civil War. Since the war there has been a tendency to make comparisons, and to an extent to sift out the parallelisms as being natural or normal for a post-war period, assigning the variations to differences in particular conditions.

A comparison will be made below which so far as we know has not been made in any other quarter. It is now nearly six years since the war ended, it is approximately ten years since the war began, and it is 11 years from the "pre-war" year of 1913. Yet with the lapse of 11 years a great many of our comparisons take the single year 1913 as the standard. It is the base of many index numbers, and the impression is fostered that 1913 had a degree of normality which it would be strange for any year in our variegated industrial history to possess.

As we are thoroughly committed to the idea that even after the lapse of a decade the pre-war year properly may be taken as a basis, what would have been shown if after the Civil War we had similarly taken 1860 as a base? In order to make the comparison, we have computed index numbers of wholesale commodity prices, with 1860 as base, using a publication of the Bureau of Labor Statistics in which the bureau was using as base, or 100, the average prices for 1890 to 1899 inclusive. Alongside these index numbers we set the series of index numbers now being used. In the table one space is skipped in the Civil War period to make 1865 and 1919 coincide, for at the end of 1864 it was known that the Civil War was ended, even though the final surrender had not occurred.

Year	1860 Base	1913 Base	Year
1860	100	100	1913
1861	98	98	1914
1862	116	101	1915
1863	160	127	1916
1864	225	177	1917
....	...	194	1918
1865	208	206	1919
1866	185	226	1920
1867	165	147	1921
1868	161	149	1922
1869	157	154	1923
1870	140	148*	1924

*Tentative.

We find here not a little parallelism, together

with some divergences. It is entirely proper to assume that the departure from a gold basis in the Civil War period caused prices to rise more than they otherwise would have done; hence the 1864 index number being 16 per cent above the 1918 index number represents no great divergence. On the other hand, the bulge of prices in 1920 had no parallel after the Civil War, and we know now what a foolish mistake that rise was. The columns wind up, in their last two or three years, pretty close together.

The question naturally may be asked, what occurred after 1870, and the answer is that the four years, 1870 to 1873, showed an average index number of 135.

There has been much concern over the fact that prices for different groups of commodities have not been hanging together, products of the farm, for instance, being low in price relative to things the farmer buys. For the year 1870 we compute the index number, based on 1860 prices, as follows:

	For 1870 (1860=100)
Farm products	143
Food, etc	162
Cloths and clothing	143
Fuel and lighting	158
Metals and implements	128
Lumber and building material	156
Chemicals and drugs	118
Housefurnishing goods	106
Miscellaneous	158
All commodities	140

The divergences in the groups of commodities are not greatly dissimilar to those we have had lately. The conspicuous exception is that farm products held up, being a trifle above the pre-war relation, instead of well below. Metals were relatively low and building material was relatively high, as has been the case in the present post-war period, but housefurnishing goods were very low, while now their position is reversed.

ELECTRIC trucks are enjoying a new lease on life. Periodic publicity bulletins issued by the Society for Electrical Development, in summarizing many arguments in favor of the electric truck, indicate increasing popularity by definite lists of increasing numbers put into use by so-called fleet owners. It is shown that the electrically driven vehicle is at present developing in a delivery service field, such as one involving repeated stopping and starting. The impression left also is that with constant application of skill in engineering, manufacturing and sales no great concern should be felt over extinction of the self-propelled motor car. Threatened exhaustion of fuel for the internal combustion motor in automobile service and commercial impracticability of developing fuel apart from the cracking of oil are perhaps only academic questions. Thus the point at the moment is that the electrical vehicle is finding meanwhile a very definite place in the economic scheme of things. Just as draft horses are not disappearing so rapidly as many suppose, and just as illuminating gas was not crowded out by electric light but instead has taken a larger place with the development of electricity, so it may be that the electric truck is destined to grow and to hold a place all its own.

ORE BRIDGES DESTROYED

Effects of Storm at Lorain and Sandusky—Steel Plants Not Damaged

CLEVELAND, July 1.—Two iron ore handling bridges on ore docks at Lorain were destroyed and the Lorain plant of the American Shipbuilding Co. was badly damaged in the cyclone that swept that city June 28 and resulted in a loss of nearly 100 lives. One of the ore bridges belonged to the National Tube Co. and the other to the Baltimore & Ohio Railroad Co. The National Tube Co. was outside of the path that suffered from the greatest fury of the storm and with the exception of the wreck of the ore bridge, this company sustained no loss. As a result of the loss of the handling equipment, ore shipments into Lorain will be interfered with for some time.

About ten days ago, in another storm, one of the National Tube Co.'s bridges at Lorain was thrown off its track and damaged and cannot be repaired in less than six weeks. With two bridges out of commission the company has only one bridge left for handling ore. The Steel Corporation will divert most of its ore shipments to other ports until the bridge recently damaged can be placed in commission. The destruction of the bridge on the Baltimore & Ohio dock is not expected to interfere very much with the ore movement, as most of the ore that reached this dock is shipped direct and does not require a bridge for handling it.

The movement of boats on the Black River between Lake Erie and the National Tube Co. plant is entirely suspended owing to the wrecking of the Erie Street and the Nickel Plate bridges in Lorain. However, these bridges are not seriously damaged and it is expected that they will be repaired sufficiently today to permit the spans being swung to let boats through. However, before navigation is resumed, examinations will be made to ascertain whether there are any obstructions in the river channel.

All the roofs on the various manufacturing buildings at the plant of the American Shipbuilding Co. were torn off by the wind, four traveling cranes were wrecked and some of the trestles were torn down. Outside of the loss of the roofs and the breaking of windows, the buildings were not materially injured and not a great deal of damage was done to the machinery equipment. One boat, the Henry Ford II, which was about completed, was torn from its moorings and crashed into the Erie Street bridge and suffered some damage.

The storm did considerable damage to industrial plants in Sandusky. Among plants badly damaged or almost entirely destroyed were those of the Sandusky Tool Co., the Mack Iron Works, Sandusky Washing Machine Co., and Kilbourne Cooperage Co.

First Coke from New Carnegie Clairton By-Product Ovens

The first coke was pushed from the most recently completed units of the by-products coke ovens at the Clairton, Pa., plant of the Carnegie Steel Co., on the afternoon of June 26. The addition had been under construction nearly two years and began production six years to a day from the time the origial plant was put into operation. It consists of 366 ovens arranged in six batteries of 61 ovens each and has a capacity to carbonize 8500 tons of coal a day. It will produce daily 6000 tons of coke, 55,000,000 cu. ft. of gas, 90,000 gallons of tar, 215,000 lb. of ammonium sulphate and 25,000 gallons of benzol products.

With this addition the by-product plant at Clairton is the largest in the world, with a total of 1134 ovens, having an annual carbonizing capacity of 8,085,000 tons of coal and a yield of 6,350,000 tons of coke.

JAPAN MAKES APPROPRIATION

Action by Diet Spurs Inquiry—Sheet Prices Weaker—Bolivian Rails to Belgium

NEW YORK, July 1.—Passage of the reconstruction bill and appropriation of money for reconstruction work for the next six months is expected to mark the beginning of a trend of improvement in Japanese trade. Although action on the appropriation for construction was not taken by the Japanese Diet until June 23, it had evidently been anticipated to a certain extent, for exporters report a fair volume of inquiries for small lots of various materials. A number of inquiries for light gage black sheets is noted, but all are for very small tonnages. Quotations by American mills are on a lower level, one interest, which has steadily held to a price of $95 to $96 per ton, c.i.f. Japan, having, according to report, dropped to the level of other mills, said to be willing to quote as low as about $92 per ton. British sellers are still underquoting the American makers of black sheets, holding to a price of about £20 10s per ton, c.i.f. Japanese port, equivalent to an American quotation of $87 to $88 per ton. In some quarters it is believed that with a really sizable tonnage of black sheets at stake, American mills might be willing to meet this competition.

The Chinese market is quiet except for comparatively good sized orders at intervals for material to go into stock. One exporter to the Far East reports having booked a tonnage of gas pipe, probably for stock in a warehouse in China. An inquiry on which early action is expected calls for 200 tons of sheet steel piling for the city of Shanghai. Wire short prices are apparently still too high to interest Chinese buyers, galvanized shorts in good condition being quoted as high as $50 to $55, f.a.s. Atlantic port, with plain shorts bringing $37 to $40, when in first class condition.

Japanese railroad inquiries have been added to by the appearance in the market of a tender from the Kioto Electric Railway, for 2½ miles of 91-lb. high T-rails. The opening date on the 8200 brass condenser tubes for the South Manchuria Railway Co., is reported to have been slightly advanced. One exporter to Japan has recently quoted on a merchant inquiry for about 500 boxes of tin plate. A recent order was booked by a Japanese export house for a small tonnage of tin mill black plate.

No action is as yet reported to have been taken by the Argentine oil fields on the 20,000 tons of oil well casing. Another inquiry from South Ameria for oil field work comes from Colombia and according to report is for 200 miles of pipe for the Colombia fields. A recent inquiry of the Bolivian Government through the Ulen Contracting Co., New York, which is engaged in the execution of a contract for construction of a railroad in Bolivia, called for about 4800 tons of 60-lb. rails and accessories, for delivery by Sept. 1. La Providence steel works in Belgium is understood to have received the order for 4000 tons and the small remaining tonnage is reported to have been placed with a leading export interest in the United States.

Karl L. Kirmse, engineer, a director of the Heinrich Sonnenberg Aktiengesellschaft Werkzeugmaschinen Düsseldorf, Germany, sails July 5, after a brief business trip in this country. Mr. Kirmse has made his headquarters at 140 Liberty Street, New York, and was interested in obtaining representation in Germany for certain types of machine tools.

VALLEY PLANTS SUSPEND

Operations Reduced Temporarily Will Be Increased Next Week

YOUNGSTOWN, July 1.—Suspensions this week by Valley rolling mill interests on account of the holiday observance, will be followed next week by strengthened schedules. Open-hearth furnace operations this week show an enlargement, which is a favorable indication, as the steel interests are preparing for larger finishing mill schedules.

The Trumbull Steel Co. is virtually idle this week in its sheet, tin plate and strip departments, operating only two open-hearths. Its schedules the following week, however, provide for full finishing mill operations, except six sheet mills.

On the other hand, the Sharon Steel Hoop Co. this week is operating one blast furnace, three open-hearth furnaces, four strip and eight sheet mills.

The Republic Iron & Steel Co. has suspended this week its sheet mill plant at Niles, its Brown-Bonnell plant at Youngstown and its Bessemer department. Its active plants include two blast furnaces, eight open-hearths, four tube mills and the plate mill.

Of the non-integrated rolling interests, plants of the Newton Steel Co., Falcon Steel Co. and Waddell Steel Co. are wholly inactive this week.

Open-hearth production the first four days of the week include 21 active furnaces, of 52 in the Valley, against 16 active last week. Thirty-two independent sheet mills started the week, comparing with 47 the previous week, while the Farrell, Pa., plant of the American Sheet & Tin Plate Co., which has been operating at 90 per cent the past two weeks, is suspended.

The A. M. Byers Co. is operating its skelp mill and 46 of 88 puddle furnaces at its Girard property, closing Thursday evening for the week.

As a rule, finishing departments of Valley mills will suspend Thursday night, and remain inactive until the midnight shifts the following Sunday night.

The Sheet & Tube schedule at the beginning of the week included: Two blast furnaces, eight open-hearths, four tube mills, two lapweld and two buttweld; two skelp mills; 9-in. and 12-in. bar mills; 16 sheet mills, including 12 at the East Youngstown property and four at the Western Reserve works; the 84-in. plate mill at the Brier Hill works and the rod, wire and conduit departments at a reduced rate.

To Make Automobile Hydraulic Drive

The Bovee Transmission Corporation, 4427 West Kinzie Street, Chicago, incorporated with $1,250,000 capital stock, will manufacture a complete hydraulic drive unit for automobiles, trucks, tractors and commercial vehicles, dispensing with the usual foot and emergency brakes, clutch system, gear shift system, electrical self-starting system, universal joint drive shaft, differential, burglar lock, leaf spring suspension, shock absorbers, snubbers and electric horn. The unit is an abrupt departure from present methods and is said to be free from the limitations of present units which the company's single unit will displace. It is claimed that the new system is capable of going from high speed to reverse at the rate of 100 times a minute at any speed without abuse to the mechanism; also that it will stop a car in one-half to one-third the distance now required with the best quality of brakes.

The company is undecided as to whether it will build or lease a plant or buy one outright. It is open to the best available proposition with 10 to 40 acres of land and plant capacity of 30,000 to 100,000 sq. ft. After obtaining a plant, machine tool equipment will be bought, comprising multiple drilling and tapping machines, turret lathes, boring machines, centerless grinding machines, gear hobbing machines of both the large and small types, keyseating machines, hand drilling machines, punch presses, pack hardening and tempering machines, screw machines and general tool room equipment. At present the company has a small tool room and laboratory in which the transmission drive unit was developed, but this will be used only as an engineering plant until a suitable location has been found. Officers are Ransom Y. Bovee, president; Edward Walter, vice-president; George M. Tearney, secretary, and John R. Gorey, treasurer.

European Conditions Improving Slowly

British Heavy Steel in Poor Demand—Continental Position Uncertain—Germany Hard Hit by Capital and Credit Stringency

(*By Cable*)

LONDON, ENGLAND, July 1.

GENERAL conditions continue dull. Pig iron is quiet, with buyers restricting their purchases to immediate requirements. Export sales are poor and stocks are accumulating. Foundry grades are weak. Hematite is dull on both domestic and export markets. Foreign iron is competing in shipment of orders.

Foreign ore is quiet. Bilbao Rubio is held nominally at 22s. 6d. ($4.86) c.i.f. Tees.

Finished steel, especially heavy material, is in very poor demand, but makers are unwilling to reduce prices further. The Admiralty has placed the bulk of the steel contracts for the five new light cruisers with West Coast makers. Export demand generally is poor.

Clyde output for June was 22 vessels aggregating 72,791 tons gross register.

On the Continent

Continental business is dull and the position is difficult to judge. Many works want orders, but prices generally are not sufficiently attractive. India, however, recently has made fair purchases of all kinds of materials.

The Kramatorski Metallurgical Co. (Russia) has blown in one blast furnace and one Martin (open-hearth) furnace. The pig iron output is estimated at 8000 tons monthly.

Sheets and Tin Plate

Tin plate demand is continued but the volume of business is smaller the past few days. Merchants have placed large option contracts spreading over the third quarter. Consumers at home and abroad are active. South America furnishes some keen buyers and Japan is showing more interest.

Galvanized sheets are strong on good all-around inquiry. Makers are sold out until the middle of October.

Black sheets are firm, with moderate sales, including those to the Far East.

FRENCH MARKET MORE ACTIVE

Steel Sheets in Greater Demand—Pig Iron Production Heavy—Forward Buying Scarce

PARIS, FRANCE, June 20.—Uncertainty is the dominant feature of the French market; buyers refuse to make forward commitments and dealers hesitate to maintain their prices or risk concessions. From this situation, which greatly impedes the development of trade, prices and deliveries are irregular.

Regrettable though it may be, it will be remarked that, as far as the iron and steel market is concerned, the periods of activity always coincide with downfall of our currency. More confidence has developed on the British markets, thanks to the relative appreciation of our currency, but the prices remain still too high to be competitive with ours on the Continent markets. Quiet prevails at the Brussels Bourse and business is rendered difficult on account of the prices being still inaccessible.

Coke.—For the first ten days of June the ORCA has been supplied with 103,330 tons of coke, against 98,483 tons for the following seven days. Comparison of these figures indicates that the deliveries are being resumed on a large scale, the daily average being 11,870 tons. The June price for indemnity coke, maintained at 150.75 fr. or $8.27 (delivered frontier station Sierck, ORCA'S charges included), has not been established yet for July.

Pig Iron.—The production of pig iron remains satisfactory, with a quiet demand for the output. Export business is difficult for us since the abolition of the coke bounties; the Belgian and German plants are asking lower prices than ours; on the other hand, the

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British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.32 per £1, as follows:

Durham coke, delivered	£1	7½s.	to £1	8s.	$5.94	to	$6.05
Bilbao Rubio ore†	1	4			5.18		
Cleveland No. 1 foundry	4	14			20.30		
Cleveland No. 3 foundry	4	9			19.22		
Cleveland No. 4 foundry	4	8			19.01		
Cleveland No. 4 forge	4	7			18.79		
Cleveland basic	4	7½			18.90		
East Coast mixed	4	16	to 4	16½	20.74	to	20.84
East Coast hematite	4	19	to 5	0	21.38	to	21.60
Ferromanganese	17	0			73.44		
Rails, 60 lb. and up	8	10	to 9	0	36.72	to	38.88
Billets	7	15	to 8	5	32.40	to	35.64
Sheet and tin plate bars, Welsh	8	12½			37.26		
Tin plates, base box	1	2⅝	to 1	3	4.89	to	4.97
					C. per Lb.		
Ship plates	9	5	to 9	15	1.78	to	1.88
Boiler plates	13	0	to 13	10	2.51	to	2.60
Tees	9	7½	to 9	17½	1.81	to	1.90
Channels	8	12½	to 9	2½	1.66	to	1.76
Beams	8	7½	to 8	17½	1.61	to	1.71
Round bars, ¾ to 3 in.	9	15	to 10	5	1.88	to	1.98
Galvanized sheets, 24 g.	18	5	to 18	10	3.47	to	3.57
Black sheets, 24 gage	13	5			2.56		
Black sheets, Japanese specifications	15	5			2.94		
Steel hoops	10	15	& 12	10*	2.07	&	2.41*
Cold rolled steel strip, 20 gage	17	0			3.28		

*Export price. †Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

(*Nominal*)

Foundry pig iron:							
Belgium	£4	2½s.	to £4	5s.	$17.82	to	$18.36
France	4	2½	to 4	5	17.82	to	18.36
Luxemburg	4	2½	to 4	5	17.82	to	18.36
Billets:							
Belgium	6	0			25.92		
France	6	0			25.92		
Merchant bars:					C. per Lb.		
Belgium	6	15			1.30		
Luxemburg	6	15			1.30		
France	6	15			1.30		
Joists (beams):							
Belgium	6	15			1.30		
Luxemburg	6	15			1.30		
France	6	15			1.30		
Angles:							
Belgium	8	0	to 8	5	1.54	to	1.59
⅛-in. plates:							
Belgium	8	0			1.54		
Germany	8	0			1.54		
¼-in. plates:							
Luxemburg	8	0			1.54		
Belgium	8	0			1.54		

rise of sterling impedes our prices from being competitive on the British markets.

Prices are very irregular: chill-cast iron No. 3 is worth 360 fr. per ton, and 10 fr. less for the P. R.; this average price being much higher than those applied by some of the East and Lorraine plants. For export, chill-cast iron is dealt in at the price of 420 to 430 Belgian francs (365 to 374 French francs or $20 to $20.50) f.o.b. Antwerp and the basic ordinary grade is worth 390 to 400 Belgian francs (340 to 348 French francs or $18.65 to $19.10). Hematite prices are steadier from 430 fr. or $23.60 (rather exceptional), up to 450 fr. or $24.70 per ton at works, according to region and grade.

Ferroalloys.—Ferromanganese, 76 to 80 per cent Mn., is downward in sympathy with sterling and is being quoted 1500 fr. ($82.30) delivered; spiegeleisen, 10 to 12 per cent Mn., is worth 575 fr. ($31.55) and the 18 to 20 per cent grade, 600 fr. ($32.90) delivered.

Semi-Finished Products.—Owing to smaller demand the plants are building new stocks for their own requirements. With the advantage of exchange, a rather large amount of billets has been sold in Great Britain; this current of trade has slackened, however, and it is reported that on the Middlesborough market the Continental billets and bars still are being sold from £2 to £3 under the local rates.

On the French inland market the current quotations for blooms are 42 to 44 fr. or $23.04 to $24.14 per gross ton); billets, 45 to 47 fr. ($24.70 to $25.80) per 100 kg. at works (basic steel). At such rates the iron and steel builders and constructors cannot hesitate to buy. The few offerings for export are at £5 15s. to £5 17s. 6d. for billets (460 to 470 French francs or $25.25 to $25.80) and £6 2s. 6d. for largets (490 fr. or $26.90).

Rolled Steels.—Trading is slack, as most of the plants buy for immediate needs only. Price reductions are obtained for spot delivery. The rates for beams are still very much discussed, this explaining the irregularity of prices at the plants; the actual basis quotation is 54 to 57 fr. (1.32c. to 1.39c. per lb.)

With a more active inquiry for merchant grades, this department is better. Orders have been booked to such an extent that some plants have withdrawn from the market and have work assured for several months ahead. The ruling quotation is 57 to 59 fr. (1.39c. to 1.44c.) per 100 kg., and in some cases 60 and 61 fr. (1.47c. and 1.50c.) The Sarre plants, which quoted extremely low rates recently, have just raised them to 570 to 580 fr. per ton (1.39c. to 1.42c. per lb.) (basis) and this without taking into consideration the increased cost of transport, which is rather disadvantageous for them. F.o.b. Antwerp, the rates are £6 7s. 6d. to £6 12s. 6d (510 to 530 fr. or 1.25c. to 1.30c.) and £6 10s. to £6 15s. (520 to 540 fr. or 1.27c. to 1.32c.) for bars.

Sheets.—This section is firmer and prices show a tendency to harden. Delivery times are lengthened, but conditions of sale vary from one plant to the other. Heavy grades are worth 72 to 78 fr. (1.76c. to 1.91c.) up to 80 fr. (1.96c.) eventually; 2 and 3 mm. gages (No. 14 and No. 11½) are not be had within 3 to 4 months time and are worth 85 to 90 fr. (2.08c. to 2.20c.); the inquiry for light grades has been much larger of late and some plants have ceased to submit quotations. Their average price is 100 to 105 fr. per 100 kg (2.45c. to 2.57c.) at mills. The French plants are out of the Antwerp market, their prices being too high; the Belgians quote 825 to 850 fr. (691 to 700 French fr. or 1.69c. to 1.71c.).

Foundry Products.—Good activity. An adjudication of the State Railroads involved the following items: Steel buffers, weight 25.5 kg. to 70.3 kg. (56 to 155 lb.) from 185.50 fr. (4.55c. per lb.) up to 219.45 fr. (5.39c.) per 100 kg. delivered Sotteville; 41 and 42 kg. (90 to 92 lb.) steel buffers, from 217.50 to 220 fr. (5.33 to 5.39c.) delivered Rennes; 85 kg. (188 lb.) steel buffers, 229.30 fr. (5.62c.) delivered Saintes. Steel castings, weight 2 to 40 kg. (4½ to 88 lb.) of a total weight of 40,500 kg. (40 gross tons) for the average price of 2.38 fr. (5.83c.) per kg.

GERMANS SHORT OF HARD CASH

Working Capital Scarce, Resulting in Cancellations and Hand-to-Mouth Buying—Pig and Scrap Quiet

(By Radiogram)

BERLIN, GERMANY, June 30.—The market is dull and prices are weak. Owing to the shortage of working capital only small orders are being given and many orders are being cancelled. The pig iron and scrap markets are quiet.

To realize cash for stock in hand dealers with big stocks are underselling producers. They have been selling bars down to 125 gold marks per metric ton (1.35c. per lb.), although the minimum production cost is 140 marks. Demand for steel rails is small and French and Belgians offer them at lower prices than the Germans.

Locomotives are more active, but the only machines in much demand are those for printing, together with cranes and electric motors. The German Government has removed the import prohibition on most kinds of machine tools and on twist drills.

GERMAN EXPORTS AND IMPORTS

Imports Heavier Than Exports in Many Lines—Large Exports of Scrap

BERLIN, GERMANY, June 16.—Foreign trade in the first four months of 1924 continues to show an import surplus of pig iron, steel bars and other heavy sorts. Ore imports (including manganese) totaled 223,073 metric tons; exports, 109,848 tons. Imports of iron and steel, and of wares thereof, excluding machinery, totaled 410,026 tons; exports, 522,925 tons. Leading items were.

(Metric Tons)

	Imports	Exports
Pig iron	53,498	19,512
Scrap	10,226	135,216
Ingots, blooms, slabs, billets, etc.	58,113	1,435
Bars, girders, bands, etc.	131,589	66,773
Sheets	40,069	50,871
Wire	24,376	41,959
Tubes	11,377	14,285
Rails, ties, etc.	57,365	4,866
Railroad wheels, etc.	4,242	6,211
Boilers and parts	247	5,074
Agricultural implements	71	9,084
Tools	139	7,443

Machinery imports were 1915 tons; exports, 79,713 tons.

Japan Adopts New Tariff Policy

WASHINGTON, July 1.—Negotiations recently completed in London for revision of the treaty of commerce and navigation between Great Britain and Japan resulted in the abandonment of the conventional tariff rates on iron and steel products accorded Great Britain by Japan, according to a cablegram to the Department of Commerce from Commercial Attaché Walter S. Tower, London.

Iron and steel products imported into Japan from all countries, including the United States, at present enjoying the benefits of the Japanese conventional tariff will be subject after next March to the general tariff duties. Pig iron in lumps, ingots, blooms, billets and slabs will be subject to a duty of 0.10 yen per 100 kin instead of 0.083 yen per 100 kin. Plates and sheets, other than checkered or corrugated, not coated with base metals and not exceeding 0.7 millimeter in thickness, will be subject to a duty of 15 per cent ad valorem instead of a specific duty of 0.30 yen per 100 kin. Ordinary tinned iron and steel sheets and galvanized plates and sheets will be assessed a duty of 15 per cent ad valorem instead of 0.70 and 1.20 yen per 100 kin, respectively.

JUNE IRON OUTPUT

Decrease from May Was 16,817 Gross Tons Per Day

Net Loss of 20 Furnaces, with 25 Shut Down and 5 Blown In

A still further large loss was recorded in June in the blast furnace output of the country. While not as large as the decline in May, the June loss per day was over four times that in April when the present severe recession started. The June loss was 16,817 gross tons per day and compares with 23,423 tons per day in May and 4028 tons per day in April. The net loss of furnaces in June was 20 compared with 46 in May and 40 in April.

The production of coke and anthracite pig iron for the 30 days of June amounted to 2,026,221 gross tons or 67,541 tons per day as compared with 2,615,110 tons or 84,358 tons per day for the 31 days in May. This is a loss of 16,817 tons per day or 20 per cent from the loss in May. The June rate is the lowest since August, 1922, when it was 58,586 tons per day at the time of the coal and railroad strikes. There were 25 furnaces blown out or banked and 5 blown in during June or a net loss of 20. Of the 25 furnaces shut down 18 were steel making and 7 were merchant.

The capacity of the 164 furnaces in blast on July 1 is estimated at 65,200 tons per day as compared with 77,300 tons per day for the 184 furnaces in blast June 1.

The ferromanganese production in June was 20,049 tons as compared with 14,993 tons in May. The spiegeleisen output of 9405 tons in June contrasts with 9336 tons in May.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from June, 1923, is as follows:

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
June, 1923	90,907	31,641	122,548
July	88,798	29,858	118,656
August	86,479	24,795	111,274
September	78,799	25,385	104,184
October	77,255	24,331	101,586
November	72,352	24,124	96,476
December	69,921	24,304	94,225
January, 1924	73,368	24,016	97,384
February	83,126	22,900	106,026
March	86,276	25,533	111,809
April	82,101	25,680	107,781
May	62,176	22,182	84,358
June	50,237	17,304	67,541

The figures for daily average production, beginning with January, 1918, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1918—Gross Tons

	1918	1919	1920	1921	1922	1923	1924
Jan.	77,799	106,525	97,264	77,945	53,063	104,181	97,384
Feb.	82,835	105,006	102,720	69,187	58,214	106,935	106,026
Mar.	103,648	99,685	108,900	51,468	65,675	113,673	111,809
Apr.	109,607	82,607	91,327	39,768	69,070	118,324	107,781
May	111,175	68,002	96,312	39,394	74,409	124,764	84,358
June	110,793	70,495	101,451	35,494	78,701	122,548	67,541
July	110,354	78,340	98,931	27,889	77,592	118,656	.....
Aug.	109,341	88,496	101,529	30,780	58,586	111,274	.....
Sept.	113,942	82,932	104,310	32,850	67,791	104,184	.....
Oct.	112,482	60,115	106,212	40,215	85,092	101,586	.....
Nov.	111,802	79,745	97,830	47,183	94,990	96,476	.....
Dec.	110,762	84,944	87,222	53,196	99,577	94,225	.....
Year	105,496	83,789	99,492	45,325	73,645	109,713	.....

Among the furnaces blown in during June were the following: No. 3 Clairton furnace of the Carnegie Steel Co., in the Pittsburgh district; the Sharpsville furnace in the Shenango Valley; No. 3 Gary furnace in the Chicago district; the St. Louis Coke & Iron Co.'s furnace at Granite City, Ill., and the Rockdale furnace in Tennessee.

Among the furnaces blown out or banked during June were the following: H furnace at the Lackawanna plant of the Bethlehem Steel Corporation in the Buffalo district; Mary furnace of the Thomas Iron Co. and B furnace at the Bethlehem plant of the Bethlehem Steel Corporation in the Lehigh Valley; A furnace at the Worth plant of the Bethlehem Steel Corporation in the Schuylkill Valley; the Lochiel furnace in the Lower Susquehanna Valley; one Aliquippa and one Eliza furnace of the Jones & Laughlin Steel Corporation and No. 1 furnace of the Pittsburgh Steel Co. in the Pittsburgh district; No. 1 Shenango furnace in the Shenango Valley; the E, H and J furnaces at the Cambria plant of the Bethlehem Steel Corporation in western Pennsylvania; the Top Mill furnace of the Wheeling Steel Corporation in the Wheeling district; one River and one Toledo furnace as well as the Dover and United furnaces in central and northern Ohio; two South Chicago furnaces of the Illinois Steel Co., one Iroquois and one Calumet furnace, besides two Gary furnaces in the Chicago district, and the Sheffield furnace of the Sloss-Sheffield Steel & Iron Co. with one furnace of the Woodward Iron Co. in Alabama.

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces for June and the three months preceding.

Pig Iron Production by Districts, Gross Tons

	June (30 days)	May (31 days)	April (30 days)	March (31 days)
New York	108,263	151,649	203,920	242,003
New Jersey	.....	.....	12,545	13,006
Lehigh Valley	53,627	79,843	83,969	97,817
Schuylkill Valley	56,472	63,578	64,558	61,346
Lower Susquehanna and Lebanon Valleys	37,647	44,825	63,448	68,863
Pittsburgh district	429,821	541,295	657,479	716,106
Shenango Valley	65,566	86,777	131,987	134,925
Western Pa.	58,282	97,951	138,455	158,142
Maryland, Virginia and Kentucky	42,601	56,653	77,247	88,631
Wheeling district	94,213	123,689	152,843	158,825
Mahoning Valley	124,065	190,104	326,091	373,410
Central and Northern Ohio	260,253	301,187	308,615	294,624
Southern Ohio	19,848	43,624	50,874	56,001
Illinois and Indiana	325,142	440,790	586,722	629,381
Mich., Minn., Mo., Wis., Colo. and Utah	119,119	132,169	126,765	127,788
Alabama	119,507	249,268	230,548	231,817
Tennessee	11,795	11,708	17,362	11,801
Total	2,026,221	2,615,110	3,233,428	3,466,086

Production of Steel Companies—Gross Tons

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the foregoing totals of steel making iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total Production		Spiegeleisen and Ferromanganese			
			1923		1924	
	1923	1924	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan.	2,479,727	2,274,005	19,358	12,056	20,735	7,948
Feb.	2,259,154	2,410,658	21,282	3,657	22,405	9,870
Mar.	2,724,305	2,674,565	20,730	13,832	22,351	13,796
Apr.	2,704,360	2,463,027	20,808	7,440	23,580	4,240
May	2,976,892	1,927,461	19,568	9,533	14,993	9,336
June	2,727,208	1,507,110	19,717	18,289	20,049	9,405
½ year	15,871,646	13,256,826	121,564	64,807	124,113	54,595
July	2,752,738	.....	26,493	12,876	.....	.....
Aug.	2,680,851	.....	22,045	5,586	.....	.....
Sept.	2,363,967	.....	23,206	4,478	.....	.....
Oct.	2,394,922	.....	20,015	15,931	.....	.....
Nov.	2,170,567	.....	14,839	16,783	.....	.....
Dec.	**2,167,563**	.....	**18,069**	**10,124**	.....	.....
Year	30,402,254	.....	246,231	130,585	.....	.....

Production and Price Chart

The fluctuations in pig iron production from 1915 to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of the daily average production, by months, of coke and

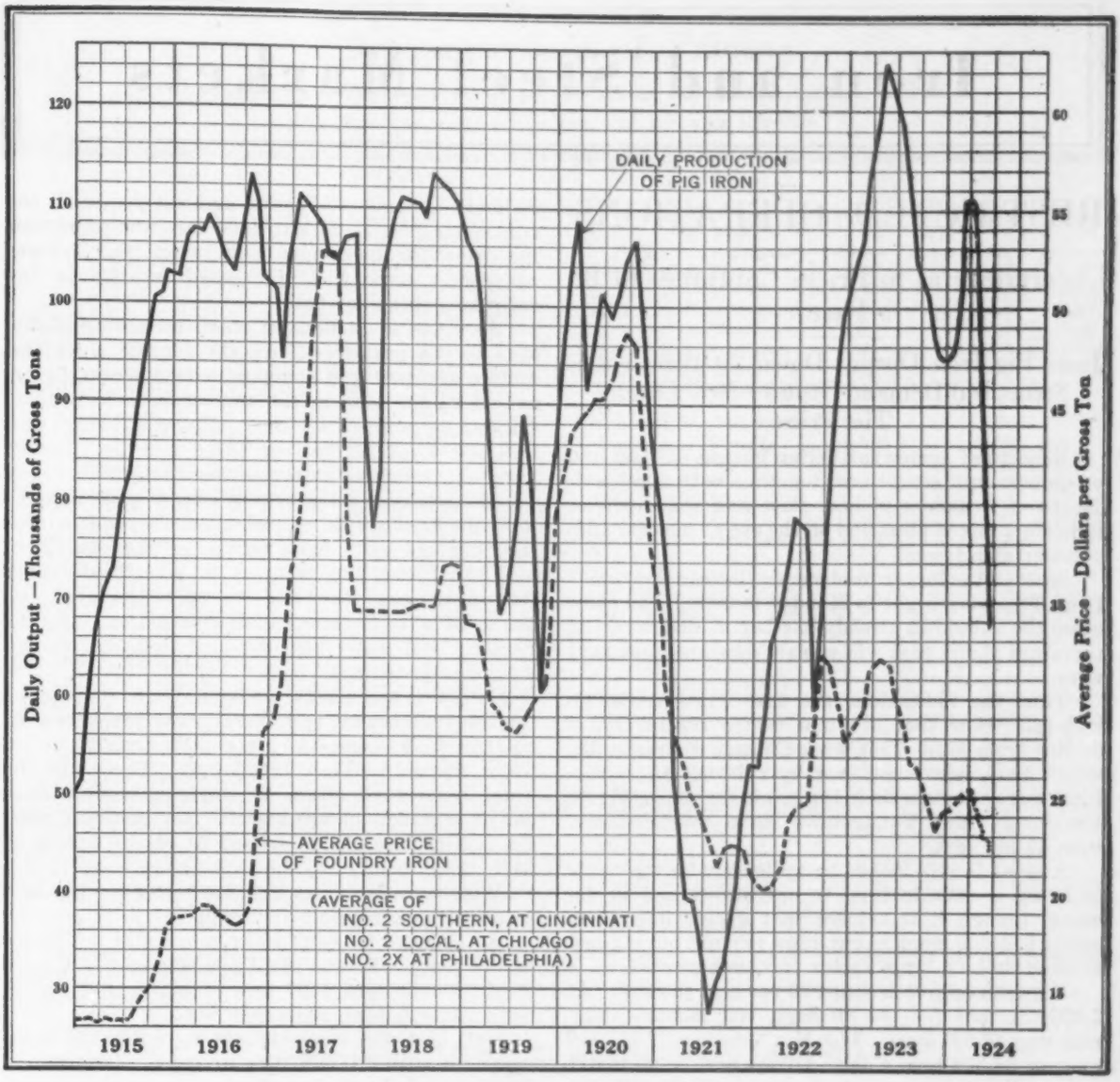

Diagram of Pig Iron Production and Price

anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnaces in Chicago, and No. 2X at Philadelphia. They are based on the weekly quotations of THE IRON AGE.

Production of Coke and Anthracite Pig Iron in United States by Months, Beginning Jan. 1, 1920—Gross Tons

	1920	1921	1922	1923	1924
Jan.	3,015,181	2,416,292	1,644,951	3,229,604	3,018,890
Feb.	2,978,879	1,937,257	1,629,991	2,994,187	3,074,757
Mar.	3,375,907	1,595,522	2,035,920	3,523,868	3,466,086
Apr.	2,739,797	1,193,041	2,072,114	3,549,736	3,233,428
May	2,985,682	1,221,221	2,306,679	3,867,694	2,615,110
June	3,043,540	1,064,833	2,361,028	3,676,445	2,026,221
½ year	18,138,986	9,428,166	12,050,683	20,841,534	17,434,492
July	3,067,043	864,555	2,405,365	3,678,334	.....
Aug.	3,147,402	954,193	1,816,170	3,449,493	.....
Sept.	3,129,323	985,529	2,033,720	3,125,512	.....
Oct.	3,292,597	1,246,676	2,637,844	3,149,158	.....
Nov.	2,934,908	1,415,481	2,849,703	2,894,295	.....
Dec.	2,703,855	1,649,086	3,086,898	2,920,982	.....
Year*	36,414,114	16,543,686	26,880,383	40,059,308	.....

*These totals do not include charcoal pig iron. The 1923 production of this iron was 251,177 tons.

About 200 men employed in the Canadian National Railway shops at Stratford, Ont., have been laid off. According to John Roberts, superintendent of motive power, the reduction will hit all classes of labor. As work in the shops is resumed the men will be taken back according to seniority.

Growth of By-Product Coke Production

WASHINGTON, June 30.—The following segregation by the Geological Survey of retort-oven coke production as between plants operated in connection with iron furnaces and plants independent of furnaces shows that the growth of production from both types of plants has been in the same direction. The furnace plants increased in number and output more rapidly, however, than the others from 1914 to 1920; and during the decline on account of industrial depression in 1921 and the coal strike in 1922, the output of furnace plants continued to gain relatively over other plants.

(Net Tons Stated in Thousands)

	Number of Plants		Coke Produced (Net Tons)		Percentage of Production	
Year	Furnace	Other	Furnace	Other	Furnace	Other
1913	21	15	9,346	3,367	73.5	26.5
1914	23	14	8,029	3,190	71.6	28.4
1915	24	16	10,448	3,624	74.2	25.8
1916	29	17	14,446	4,622	75.8	24.2
1917	33	19	17,321	5,118	77.2	22.8
1918	39	21	20,124	5,873	77.4	22.6
1919	43	22	20,019	5,118	79.6	20.4
1920	45	23	25,212	5,621	81.8	18.2
1921	45	22	16,231	3,518	82.2	17.8
1922	43	21	23,889	4,660	83.7	16.3

A 75-ton storage battery locomotive, said to be the largest size as yet actually built in this country, has been put in operation at the Schenectady plant of the General Electric Co. for use on the interconnecting track systems of the plant and for operation in restricted areas where overhead or other outside current collection is impossible or impractical.

Iron and Steel Markets

RESTRICTED OPERATIONS

Uncertainty as to Prices Continues to Be a Factor

June Pig Iron Output Down 20 Per Cent—Structural Demand Grows—New Cotton Tie Price

Reports of somewhat better buying of steel and of quieter mill conditions, together with fresh evidences of weakness in bar, plate and shape prices, indicate a mixed situation on the eve of general midsummer shutdowns.

Most of the larger producers will close their mills from Thursday night to Monday morning. In some cases the shutdown already has begun, and here and there are plants that will remain down most of next week.

Thus the indications are that July production will fall below that of June, which represented a decline from May. This week Chicago district mills, which have been sustained by railroad and structural work, went to their low point for the year, and Pittsburgh and Youngstown have averaged less than 40 per cent.

August is still looked to by leaders in the trade to bring a definite turn in operations and in demand, though it is evident that uncertainty as to prices is doing much to cut down current buying and is likely to be a large factor for some weeks.

Pig-iron output declined 20 per cent in June. At 2,026,221 tons for the 30 days, last month's daily rate was 67,541 tons. The May total was 2,615,110 tons, or 84,358 tons a day. Of the decline of 16,817 tons in the daily rate, steel company furnaces contributed 12,000 tons and merchant furnaces about 4800 tons.

Not since August, 1922, when the daily rate fell to 58,586 tons under the double influence of the coal and railroad strikes, has pig-iron output been so low as in June. Since March the decline has been 40 per cent.

The net loss in active furnaces last month was 20, against 46 in May and 40 in April. The 164 furnaces in blast July 1 had a daily capacity of 65,200 tons, against 77,300 tons a day for 184 furnaces one month previous.

A further decline in foundry activity is indicated, and the average operation for the country is put at about 50 per cent. Reports in the past week from the metal-working industries show some increase in unemployment.

The recent heavy buying of pig iron has put some furnaces in a more comfortable position and in eastern Pennsylvania prices are slightly steadier, but in other sections they are still yielding. At Chicago buying has subsided and prices are off 50c. At Cleveland, where 325,000 tons was sold during June, the sales of the past week amounted to 45,000 tons. In the South the price has receded 50c. on Birmingham iron which is now $18.50. A sanitary company which recently bought 27,000 tons has taken 12,000 tons of Southern iron in addition.

An order for 3000 cars for Mexico taken by the Baldwin Locomotive Works, and not yet relet, the contracting for repairs to 1000 cars and numerous inquiries for passenger equipment and freight car repair parts have increased interest in the railroad equipment field.

Bookings of structural steel, exceeding 31,500 tons in the past week, are the largest since the middle of April and compare with a weekly average of 21,500 tons in the ten weeks intervening. Conditions point to a steady volume of bridge and building work for two or three months. Lower prices have figured in recent negotiations.

As between Pittsburgh district and Eastern mills the price spread on plates and shapes is widening, Eastern plate mills selling at the equivalent of 1.90c. Pittsburgh, whereas on structural shapes they have gone to 1.95c. to 2c. Pittsburgh, or about $4 a ton below Pittsburgh prices. On the Pacific Coast plates have declined to 2.35c., equivalent to 1.95c. Atlantic port.

Cotton tie manufacturers have opened their books for the 1924 season and there is the innovation of quoting f.o.b. domestic ports plus freight to interior instead of f.o.b. Pittsburgh. There are the usual reports of offers of European cotton ties, but no transactions are known. The domestic market is considered to be around $1.40 per bundle of 45 lb., f.o.b. port.

Wire manufacturers look for better buying as a result of higher prices for grain.

At Chicago oil tank awards are still a feature in the plate market. At Philadelphia the Cramp shipyard will need 6500 tons of plates and shapes for a Matson Line passenger boat.

May iron and steel exports were 154,136 tons, compared with 131,276 tons in April. Imports, at 66,801 tons (April, 50,969 tons), were the largest since June of last year. In May no less than 25,220 tons of pig iron came in, despite the steady decline in domestic prices.

Lake ore shipments made a good showing for June, the total being about 7,400,000 tons, but boats are now being laid up and the movement for July is expected to be less than that for the same month last year.

Pittsburgh

Sanitary Company Buys Pig Iron—Low Rate of Plant Operations

PITTSBURGH, July 1.—Tendency of the demand for steel to back and fill still is marked and reports of improvement in business in the past week have been less numerous than those noting quieter times. In view of the fact that the larger users of iron covered their requirements for the present quarter last week and the week before, that market also has lapsed into dullness. It has therefore been a quiet week. This is a typical mid-year condition, however, and in view of the fact that liquidation of supplies has been going on pretty steadily for some time, the belief is growing that actual requirements soon will force increased purchases.

A low rate of steel plant and furnace operation so

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 1, 1924	June 24, 1924	June 3, 1924	July 2, 1923
No. 2X, Philadelphia‡	$21.26	$21.26	$22.13	$29.76
No. 2, Valley Furnace†	19.00	19.00	20.00	26.50
No. 2, Southern, Cin'ti†	*22.55*	23.05	25.05	29.05
No. 2, Birmingham, Ala.†	*18.50*	19.00	21.00	25.00
No. 2, foundry, Chicago*	*19.50*	20.00	22.00	29.00
Basic, del'd, eastern Pa.	21.00	21.00	21.00	28.00
Basic, Valley furnace	19.00	19.00	20.00	25.50
Valley Bessemer, del. P'gh.	22.26	22.26	23.26	29.27
Malleable, Chicago*	*19.50*	20.00	22.00	29.00
Malleable, Valley	*19.00*	19.50	20.00	26.50
Gray forge, Pittsburgh	*20.26*	20.76	21.26	27.77
L. S. charcoal, Chicago	29.04	29.04	29.15	36.65
Ferromanganese, furnace	107.50	107.50	107.50	125.00

Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	38.00	38.00	38.00	42.50
O.-h. billets, Pittsburgh	38.00	38.00	38.00	42.50
O.-h. sheet bars, P'gh.	40.00	40.00	40.00	42.50
Forging billets, base, P'gh.	43.00	43.00	43.00	47.50
O.-h. billets, Phila.	43.17	43.17	43.17	47.67
Wire rods, Pittsburgh	48.00	48.00	48.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	*2.15*	2.20	2.20	2.45
Light rails at mill	1.90	1.90	1.90	2.25

Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.42	2.42	2.42	2.72
Iron bars, Chicago	2.20	2.20	2.25	2.50
Steel bars, Pittsburgh	*2.15*	2.20	2.20	2.40
Steel bars, Chicago	2.25	2.25	2.25	2.60
Steel bars, New York	2.49	2.54	2.54	2.74
Tank plates, Pittsburgh	2.15	2.15	2.20	2.50
Tank plates, Chicago	2.25	2.35	2.40	2.80
Tank plates, New York	*2.24*	2.34	2.34	2.84
Beams, Pittsburgh	*2.15*	2.20	2.20	2.50
Beams, Chicago	2.35	2.35	2.45	2.70
Beams, New York	*2.34*	2.44	2.44	2.84
Steel hoops, Pittsburgh	2.75	2.75	2.75	3.30

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	July 1, 1924	June 24, 1924	June 3, 1924	July 2, 1923
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.60	3.85
Sheets, galv., No. 28, P'gh.	*4.60*	4.75	4.80	5.00
Sheets, blue an'l'd, 9 & 10	2.75	2.75	2.80	3.00
Wire nails, Pittsburgh	2.90	2.90	2.90	3.00
Plain wire, Pittsburgh	2.65	2.65	2.65	2.75
Barbed wire, galv., P'gh.	3.70	3.70	3.70	3.80
Tin plate, 100-lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50

Old Material, Per Gross Ton:				
Carwheels, Chicago	**$16.00**	$15.50	$16.00	$21.00
Carwheels, Philadelphia	17.00	17.00	17.00	22.00
Heavy steel scrap, P'gh.	*15.50*	16.50	15.50	20.00
Heavy steel scrap, Phila.	15.00	15.00	15.00	17.50
Heavy steel scrap, Ch'go.	**14.00**	13.70	13.75	17.25
No. 1 cast, Pittsburgh	17.50	17.50	17.50	22.50
No. 1 cast, Philadelphia	17.50	17.50	17.50	21.00
No. 1 cast, Ch'go (net ton)	**16.75**	16.50	17.00	21.50
No. 1 RR. wrot. Phila.	**17.00**	16.50	16.50	21.00
No. 1 RR. wrot. Ch'go (net)	**12.00**	11.50	11.75	15.00

Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	$3.00	$3.00	$3.25	$4.75
Foundry coke, prompt	4.00	4.00	4.50	5.50

Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	12.62½	12.62½	12.87½	15.00
Electrolytic copper, refinery	12.25	12.25	12.50	14.50
Zinc, St. Louis	**5.80**	5.75	5.80	5.75
Zinc, New York	**6.15**	6.10	6.15	6.10
Lead, St. Louis	*6.70*	6.80	6.95	6.55
Lead, New York	7.00	7.00	7.00	6.85
Tin (Straits), New York	**45.00**	43.12½	40.75	38.50
Antimony (Asiatic), N. Y.	*8.37½*	8.50	8.50	6.95

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Composite Price, July 1, 1924, Finished Steel, 2.589c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

June 24, 1924,	2.603c.
June 3, 1924,	2.624c.
July 3, 1923,	2.789c.
10-year pre-war average,	1.689c.

Composite Price, July 1, 1924, Pig Iron, $19.38 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

June 24, 1924,	$19.54
June 3, 1924,	20.86
July 3, 1923,	26.79
10-year pre-war average,	15.72

far has not produced a condition where demands exceed supplies and consequently real firmness is lacking in prices of most finished products. Uncertainty as to prices is a factor in demand because buyers hesitate to take on even small tonnages if not satisfied that they are getting them at the lowest price. Bars and shapes have eased off to 2.15c. in this district in the past week and on the few tests given the sheet market substantial concessions from the prices quoted by the American Sheet & Tin Plate Co. and some of the larger independents were developed. Pipe stands out as one line in which prices are very well maintained and weakness noted about a month ago in wire products has pretty largely disappeared. In other directions, a real test of prices is not possible from the size of the demand.

Leading manufacturers of cotton ties yesterday opened their books for the 1924 season and adopted a new method of sale by quoting them f.o.b. Atlantic seaboard instead of f.o.b. Pittsburgh.

Due to the observance of the Fourth of July, practically all plants in this district will suspend from Thursday night until Monday morning and a few companies have suspended operations for this entire week. The week's production of ingots in this and nearby districts will hardly average 40 per cent of capacity. Blast furnace suspension continues and there is now a total of only 58 furnaces in production in this and nearby districts, as against 66 at the beginning of June.

Small sales of heavy melting steel to a local mill, together with some rather substantial purchases by Ohio melters, have imparted a stronger tone to the scrap market, but so many consumers remain out of the market that the activity of dealers is in no small measure responsible for the upward trend of prices. Practically no market exists for coke and coal and prices are purely nominal.

Pig Iron.—As is usual following a period of activity, this market has grown quiet again now that the larger consumers appear to have covered their requirements for the coming three months. Following up its recent purchase of the 27,000 tons of Northern iron, the Standard Sanitary Mfg. Co. has closed for 12,000 tons of Southern iron for third quarter delivery for its Louisville plant. This purchase was made at $18.50, Birmingham, for No. 2 plain and $19 for No. 2 soft iron. The Iron City Sanitary Mfg. Co. has an inquiry for four to five thousand tons of foundry iron for third quarter delivery before the market and there is an inquiry for 1000 tons from the United States Radiator Co. for third quarter shipment. These, however represent the only important foundry tonnages pending. Interest in the steel making grades is limited. A Pittsburgh district sheet maker who recently closed for 3000 tons of basic iron at a delivered price of $20.13, equivalent to $18.37, Valley furnace, has bought a like tonnage at a delivered price of $19.76 from a western Pennsylvania furnace, but it is understood that this was part of a trade whereby iron was taken in payment for equipment. Valley furnace prices are just where they were a week ago. Within short distances of the Valley furnaces no trouble is experienced in obtaining $19 for either basic or foundry grades, but these prices cannot be obtained in sections where outside furnaces have a freight advantage. We note no tendency on the part of Valley furnaces to meet outside competition and accordingly made no change in Valley prices. United Engineering & Foundry Co. is in the market for 1000 tons of low phosphorus iron. W. P. Snyder & Co. make the average prices of Bessemer iron from Valley furnaces in June $21.143 against $22.125 in May and of basic $19.733 against $20.32 in May.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.75 per gross ton:

Basic	$19.00 to $19.50
Bessemer	20.50 to 21.00
Gray forge	18.50 to 19.00
No. 2 foundry	19.00 to 19.50
No. 3 foundry	18.50 to 19.00
Malleable	19.00 to 19.50
Low phosphorus, copper free	27.00 to 28.00

Ferroalloys.—Lower prices are appearing on spiegeleisen and 50 per cent ferrosilicon, but there is still very close adherence to $107.50, seaboard, for ferromanganese. Business in all alloys is extremely quiet and a real test of prices consequently is lacking. There is no question but that less than $35, furnace, can be done on 20 per cent spiegeleisen on small lots and on one round tonnage recently sold for June and July shipment the concession from that figure is understood to have been more than $2 a ton. Third quarter and last half tonnages of 50 per cent ferrosilicon are being quoted at $72 to $72.50, or about the range of the bulk of first half business, but as little or no business is coming out, it is evident that buyers expect to do better. Prices are given on page 51.

Semi-Finished Steel.—Prices are entirely nominal in the absence of such a test as would be furnished by a demand. Not only is there a virtual dearth of new business, but with finishing mill operations on the decline, specifications on contracted tonnages are very light. There is no question that pipe skelp can be bought at the same level as plates, or 2.15c., but in other directions it is impossible in the absence of business or of definite offerings by producers, to make any change in prices. It would be merely a guess to say how much below quotations billets, slabs, sheet bars and forging billets might be secured if a desirable order were offered. Some makers of rods have a quotation of $49 base, but it means nothing since most makers are at $48 and both orders and specifications are light at that price. Steel works production will be very light this week and next, as all companies will suspend from July 3 until July 7, and the midyear shutdowns for plant repairs will be even more extended with some companies. Prices are given on page 51.

Iron and Steel Bars.—While the common minimum quotation of leading makers of steel bars in this district still is 2.20c., base, the absence of any definite improvement in business makes some producers more susceptible to firm offers of less and it is not denied that some business has been taken at 2.15c. The real market appears to be 2.15c. to 2.20c., base, with some mills naming 2.25c. on inquiries not desirable from a delivery or rolling mill standpoint. Iron bars still are quoted at 3c., base, for refined iron, but there is too little demand to provide a real test of that price. Prices are given on page 50.

Structural Material.—Desire for orders is poignant enough with some mills to keep prices on the downgrade and while the common minimum quotation still is 2.20c., base, 2.15c. is becoming a more open quotation. We now regard the Pittsburgh district market as 2.15c. to 2.20c. Structural lettings to local shops still run chiefly to small tonnages and while such are fairly numerous, it takes a large number to reach a respectable aggregate. Plain material prices are given on page 50.

Plates.—No serious effort now is being made to secure more than 2.15c., base, Pittsburgh, because it is generally realized that more cannot be obtained. While a good deal of high cost capacity is idle for want of orders, there is not enough business to anywhere nearly engage the low cost mills and competition for passing orders, consequently, is rather sharp. Prices are given on page 50.

Wire Products.—Business shows no pronounced betterment and evidently no improvement is likely in the next week or two, since at least two large producers have called in their road salesmen, who will be granted a vacation before again packing their grips, and one company shut down its plant last Saturday afternoon, not to resume until July 7. Prices are holding well on all products except coated nails, which have lately been selling as low as $2.30, base, per count keg. Adherence to quotations is more marked than was the case at the beginning and early part of last month. Prices are given on page 50.

Steel Rails.—Railroads tributary to Pittsburgh have taken practically all the standard rails contracted for, but the leading interest is carrying over some unspecified tonnage. Current business is merely of a pickup character and does not reach much of a total. There is no interest yet in 1925 supplies and an announcement as to prices is not likely until the fall. Demand for light rails still is extremely small and while makers of billet rails still are quoting 2c., base, it is admitted that little business is coming out at that figure and that it is merely useful as a basis of negotiation.

We quote light rails, rolled from billets, 1.90c. to 2c. base (25-lb. to 45-lb.); rolled from rail steel, 1.75c. to 1.85c. base (12-lb. to 45-lb.), f.o.b. mill; standard rails, $43 per gross ton mill, for Bessemer and open-hearth sections.

Sheets.—While some makers are finding orders and specifications a little more numerous than was the case recently, there are no serious claims that business is good. The real truth is that the market is dull and on a few fair-sized inquiries that have been before makers lately, at least half of bids were below 3.65c., base, the Steel Corporation quotation, on black three mills having named 3.50c., while on galvanized, there have been quotations as low as 4.60c. The sheet industry as a whole is not operating at more than 30 per cent of capacity and since there will be a general shutdown from July 3 to July 7, and in some instances for a longer period, it is patent that the rate will be even lower before it is higher. The primary thought behind the suspensions is plant repairs and vacations, but another is a desire to accumulate sufficient business to insure a reasonably economical operation. Prices are given on page 50.

Tin Plate.—This product is very dull as far as new business is concerned and while there is no suggestion of lower prices, it is admitted that there are no inquiries of a size to test the price. Large can makers took out their June quotas and some inroads also were made upon stocks piled in mill warehouses on orders. Packers, however, are not yet taking cans at all freely and for that reason, manufacturers are slow to enter

into negotiations for future supplies of tin plate. General line tin plate is moving well, the only sizes not participating being those for paint cans, this being a reflection of the bad weather this past spring, which materially curtailed the demand for ready mixed paints.

Cold-Finished Steel Bars and Shafting.—Only by a considerable stretch of the imagination could this division of the market be called active. Some producers note an improvement in specifications on orders, but it is admitted that the gain is in numbers rather than in the size of the individual specification. Prices are holding well at 2.90c., base, Pittsburgh, for cold-rolled or drawn shafting and screw stock, but a test in the shape of good-sized inquiries is lacking. The regular quantity extras are rarely obtained and in some instances are not demanded. Ground shafting holds at 3.30c., base, f.o.b. mill for lots of a carload or more.

Hot-Rolled Flats.—Hardly enough business is coming out in hoops and bands to definitely determine prices; the common quotation is 2.75c., base, and some mills are demanding an extra for light gage material less than 1-in. wide. In strips, the quotable market is 2.75c., for sizes rolled on the 10-in. mill, but on the wider sizes the market still ranges from 2.50c. to 2.60c., the lower figure predominating. Leading makers of cotton ties on June 30, opened their books for the 1924 season. A departure has been made from the former method of naming a price f.o.b. Pittsburgh, and this year ties will be sold f.o.b. Atlantic seaboard with freight to be added to interior points. Producers are diffident about announcing the Atlantic seaboard price, but it is understood to be $1.40 per bundle of 45 lb., which is about the basis on which foreign ties have been offered. The further inland from the coast that the ties go, the better will be the net return to makers. Current estimates are for a crop of between 11,000,000 and 12,000,000 bales, which would require about 2,000,000 to 2,250,000 bundles of ties, allowing for the remade ones which will be used. Prices are given on page 50.

Track Supplies.—Activity is lacking, as usual at this time of the year, when the railroads have pretty well covered their requirements. New buying of consequence is not likely before fall, when the roads will be entering their 1925 rail orders. Prices show no special change, but are easy rather than strong. They are given on page 50.

Tubular Goods.—Fair business is being done in pipe, but it is no tax upon productive capacity and few, if any, of the producers have any considerable backlog of orders. Jobbers continue to reduce their stocks and are confining new purchases closely to actual requirements. The leading interest has a good tonnage of line pipe, but independent producers have very little such business. There is a good deal of firmness to pipe prices, but this is not true of boiler tubes, prices of which are largely of buyer's making. Sales of 4-in. commercial seamless tubes are noted at below $90 as against $114 a ton indicated by the published discount. Discounts are given on page 50.

Cold-Rolled Strips.—Demand is very spasmodic, running well one day, only to drop back the next. The market in this district is holding rather well at 4.50c., base Pittsburgh, but it is admitted that the test of large demand is lacking. Middle Western reports indicate that as low as 4.25c., base, has been done and it is believed that a tonnage of the right size would interest mills in this part of the country at that price.

Bolts, Nuts and Rivets.—There is no particular change in the situation as regards either demand or prices. Productive capacity exceeds the current demand and prices naturally favor buyers. Prices and discounts given on page 50.

Coal and Coke.—The market of coke is as limited as ever, this applying to both demand and supply. Standard furnace coke still is available at $3 per net ton at ovens and efforts on the part of some producers to obtain more are unsuccessful. Spot foundry coke takes a range of $4 to $4.50 with the demand fair, but not sufficient to readily absorb the current production. Coal prices do not change much, but it is more of a buyers' than a sellers' market, due in no small measure to the very moderate demands upon this district for Lake supplies. Both steam and coking coals of mine run grade are quotable this week at $1.50 to $1.75, while for mine run gas coal $2 seems to be the top and on a recent Lake inquiry for 100,000 tons a quotation of $1.75 for Youghiogeny coal failed to secure the order in competition with Kentucky coal. Steam slack is quotable at $1 to $1.15 and gas slack at $1.25 to $1.30.

Old Material.—The market has grown stiffer in the past week on the steel works grades, chiefly as a result of purchases by Canton and Massillon, Ohio, consumers, who are understood to have taken about 20,000 tons of heavy melting steel and to have paid $18 and $18.50. A local mill paid as high as $17.50 for some strictly No. 1 heavy melting steel, but this material being much above the average in quality, it was worth at least 50c. a ton more than the general run of this grade. On ordinary heavy melting grade, the market is quotable from $16.50 to $17, as $16.50 is the top bid now made by any of the local mills, while $17 is as low as any is available. The Pennsylvania Railroad July list closed at noon today on about 35,000 gross tons and it is expected in view of the high prices at Ohio mills, the steel scrap will go high. Last month it sold as high as $17.35 for heavy melting grade. Compressed sheets share the strength of heavy melting steel, especially as production is light with both the sheet mills and the automotive industry running at a low rate. Foundry grades are slow and blast furnace scrap is not much wanted in this district due to the fact that so many furnaces are down. Prices some dealers are paying for yard material would indicate an expectation of a $20-market for heavy melting steel; less would not permit a profit.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton
Heavy melting steel	$16.50 to $17.00
No. 1 cast, cupola size	17.50 to 18.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	16.50 to 17.00
Compressed sheet steel	15.50 to 16.00
Bundled sheets, sides and ends	13.50 to 14.25
Railroad knuckles and couplers	19.50 to 20.00
Railroad coil and leaf springs	19.50 to 20.00
Low phosphorus blooms and billet ends	20.50 to 21.00
Low phosphorus plate and other material	20.00 to 20.50
Railroad malleable	16.00 to 16.50
Steel car axles	19.50 to 20.00
Cast iron wheels	16.50 to 17.00
Rolled steel wheels	19.50 to 20.00
Machine shop turnings	13.00 to 13.50
Sheet bar crops	16.50 to 17.00
Heavy steel axle turnings	15.00 to 15.50
Short shoveling turnings	13.00 to 13.50
Heavy breakable cast	15.00 to 15.50
Stove plate	13.50 to 14.00
Cast iron borings	14.00 to 14.50
No. 1 railroad wrought	14.50 to 15.00
No. 2 railroad wrought	16.50 to 17.00

Improved Sentiment at Youngstown

YOUNGSTOWN, July 1.—Improved sentiment in the steel industry is being sustained by reason of larger volume of inquiries and an increased number of orders, involving chiefly small tonnages of finished products. The pig iron market shows a stronger tone than rolled steel products, with more actual tonnage coming through than previously.

While prices are characterized by a leading interest as "soft," nevertheless there are no violent deviations from established independent levels.

Plates exhibit a downward tendency, due to keen competition and inclination of Eastern makers to offer prices that will stimulate buying. The market range is from 2.10c to 2.15c.

Black sheets continue with little change at 3.60c. to 3.65c., base gage. The sheet market in general, though, shows considerably more firmness than during the recent low point in demand. More orders are being received from the automobile interests for highly finished stock.

Chicago

Buying of Pig Iron Subsides—Finished Material Improving Slightly

CHICAGO, July 1.—The buying movement in pig iron has subsided somewhat following the completion of purchases by the larger melters and prices have again slumped 50c. a ton. The finished steel market, on the other hand, is showing signs of improvement. In fact, for one important local mill both new business and specifications showed an increase of 20 per cent over the previous week. Current bookings, however, are confined principally to material for prompt shipment. Stocks in consumers' hands are scraping bottom and for this reason a liberal tonnage is expected to be placed as soon as prices stabilize, but that time is not yet at hand. Further price concessions have led buyers to believe that bottom has not yet been reached and hence they are still inclined to hold back their orders. Shading is increasingly common on large lots of plates, shapes and bars. Plates are particularly weak and have been quoted at unusually low prices at distant points where Pittsburgh competition cannot be ignored. Nevertheless sentiment among both producers and consumers is improving and a gradual recovery in industrial activity is looked for. Automobile parts makers are again receiving releases against their contracts are again receiving releases against their contracts, unsold stocks of automobiles are steadily being reduced, and motor car builders are preparing to manufacture their new models. Building activity shows buoyancy and oil tank awards continue to be a feature. The railroads are buying few cars, but are specifying more liberally against their contracts for rails and track fastenings. Wire manufacturers look for improved trade as a result of higher grain prices.

Steel production in this district shows no improvement, although it has lost little new ground. No additional steel works blast furnaces have gone out, but mill operations are slightly lower, ranging from 40 to 50 per cent. All mill departments except those in continuous operation, such as the blast furnaces, coke ovens and open-hearth furnaces, will shut down Thursday night over Friday, Saturday and Sunday.

Ferroalloys.—A carlot sale of ferromanganese to a local melter was closed at the full price of $107.50, seaboard, notwithstanding persistent rumors of a quotation $1 lower. Reports of concessions in spiegeleisen also lack substantiation.

We quote 80 per cent ferromanganese, $115.06, delivered; 50 per cent ferrosilicon, $75, delivered; spiegeleisen, 18 to 22 per cent, $42.56, delivered.

Pig Iron.—Buying has tapered off somewhat as the larger melters have concluded their purchases. A considerable number of smaller users are still in the market, however. Inquiries still pending include 1000 tons of foundry for third quarter delivery at Milwaukee, two 1000-ton lots of foundry for third quarter shipment at Chicago, 600 tons of foundry and malleable for third quarter delivery at Chicago, and 300 tons of Bessemer for prompt shipment at Milwaukee. A liberal tonnage was closed during the past week, but at declining prices. As low as $19.50, furnace, has been done in this immediate district on attractive orders, while carlots are still commanding $20. At outlying points where the competition of outside producing centers is a factor, as low as $19 has been done. Reports of quotations of less than $19 lack verification. Repeated rumors of concessions on charcoal appear to relate to resale lots and not to material offered by furnaces. Silvery is weak but has not been definitely reduced. Little Southern foundry iron is finding a sale in this market, but quotations range from $18.50 to $19.50, base Birmingham. Merchant iron production in this territory is being reduced. The remaining Iroquois furnace was blown out last week and the Zenith furnace at Duluth is scheduled to go out July 3.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards or, when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	$29.04
Northern coke, No. 1 sil. 2.25 to 2.75	$20.00 to 20.50
Northern coke, foundry, No. 2, sil. 1.75 to 2.25	19.50 to 20.00
Malleable, not over 2.25 sil.	19.50 to 20.00
Basic	19.50 to 20.00
High phosphorus	19.50 to 20.00
Southern No. 2	24.51 to 25.51
Low phos., sil. 1 to 2 per cent, copper free	30.50
Silvery, sil. 8 per cent	35.29
Electric ferrosilicon, 14 to 16 per cent	45.42

Plates.—Tank placements remain the outstanding feature in an otherwise quiet market. The Humble Oil Co. has equally divided 4000 tons of tankage between the Chicago Bridge & Iron Works and the Graver Corporation. Tanks involving 1500 tons have been awarded by the Vacuum Oil Co. to Reeves Bros. Co., Alliance, Ohio. Railroad car orders are few. Plate demand from miscellaneous sources shows some slight improvement, indicating that stocks have been exhausted. Prices are weak, particularly on attractive tonnages, which are bringing out quotations of 2.25c., Chicago, or even lower, depending on the destination and competition from other producing centers.

The mill quotation is 2.25c. to 2.35c., Chicago. Jobbers quote 3.20c. for plates out of stock.

Structural Material.—Including 5660 tons of tank work, fabricating awards for the week aggregate 8070 tons. New inquiries, exclusive of tanks, involve 4600 tons. A proposed lumber exchange building, Chicago, will take 2000 tons, a bridge at Portland, Ore., 1500 tons, and a warehouse for Burnham, Stoepel & Co., Detroit, 1100 tons. A gas holder at Denver, involving 2000 tons, is still active. Local mills are commencing to feel the effects of the recent increase in fabricating awards. Fully 10,000 tons of plain material has been booked during the week. A railroad is inquiring for 1000 tons of shapes, plates and bars. Inquiries for large lots of plain material are bringing out concessions, but nothing resembling a general price reduction has been made.

The mill quotation on plain material is 2.35c., Chicago. Jobbers quote 3.20c. for plain material out of warehouse.

Bars.—Mill bookings in soft steel bars show some improvement, but demand is still far below normal. Current orders are principally for prompt shipments to replenish stocks and it is not likely that purchasing agents will buy more liberally until prices show stability. Attractive tonnages are still bringing out concessions, but sizable inquiries are so few that the general market level has not been seriously disturbed. Demand for bar iron shows no change for the better and with two important mills idle there is less incentive to grant further price concessions. An encouraging development from the standpoint of bar demand is the fact that automobile parts makers in the Detroit district are receiving small releases against their contracts. It is also reported that the number of unsold motor cars in storage is gradually being reduced.

Mill prices are: Mild steel bars, 2.25c., Chicago; common bar iron, 2.20c. to 2.25c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3.10c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.90c. for rounds and 4.40c. for flats, squares and hexagons, 4.25c. for hoops and 3.75c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.35c. to 2.40c., base; hoops, 4.45c.; bands, 3.95c.

Sheets.—As demand shows signs of reviving, competition is growing even keener, and some of the mills, notably smaller independents, are consistently cutting under the general market. Black sheets are weaker

than blue annealed or galvanized owing to the reduction in consumption by the automobile industry. Concessions to 3.50c., base Pittsburgh, are more frequent and even lower is reported. On blue annealed 2.65c. and 2.70c., base Pittsburgh, have been named, while the extreme concession on galvanized appears to be 4.65c., base Pittsburgh. Most independent mills are scheduled to shut down for two weeks commencing Thursday night, July 3.

Mill quotations are 3.50c. to 3.65c. for No. 28 black, 2.75c. to 2.80c. for No. 10 blue annealed, and 4.70c. to 4.80c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago: 3.90c. for blue annealed; 4.70c. for black, and 5.60c. for galvanized.

Wire Products.—Business is still slow, although there are signs of a revival in demand, particularly from the Missouri River Valley. If grain prices stay up, it is believed that market sentiment will steadily improve; in fact, it would not be surprising if fall demand should set in earlier than usual, in view of the small volume of business during the spring. Mill warehouse stocks are still large, but production has grown no worse. Prices are not any too steady, but they are no weaker than heretofore. For mill prices see finished iron and steel, f.o.b. Pittsburgh, page 50.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.40 to $3.75 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, $3.60 to $3.65 per 100 lb.; cement coated nails, $3 per keg.

Rails and Track Supplies.—Inquiries and releases against contracts are on a more liberal scale. An inquiry from the St. Louis district calls for 10,000 kegs of spikes and bolts, and pending business from other sources includes 10,000 kegs of spikes and bolts, 1300 tons of angle bars and 1600 rolled steel wheels. Encouraging specifications on rails and track supplies have been released by the Rock Island. The Gary Street Railway has ordered 500 tons of rails.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 2.10c., f.o.b. makers' mills.

Standard railroad spikes, 3.10c. mill; track bolts with square nuts, 4.10c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c. f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.65c. base, and track bolts, 4.65c. base.

Bolts and Nuts.—Sellers are holding rigidly to a basis of 60 and 20 off, Chicago, on large machine bolts in closing third quarter contracts, but considerable current business is being placed at lower prices. The railroads are showing more interest in bolts and jobbers are now estimating their third quarter requirements. Little business is coming from the automobile industry, but liberal orders from that quarter are expected late this month or in August when the car manufacturers get into production on their new models.

Jobbers quote structural rivets, 3.65c.; boiler rivets, 3.85c.; machine bolts up to ⅞ x 4 in., 60 per cent off; larger sizes, 60 off; carriage bolts up to ⅞ x 6 in., 55 off; larger sizes, 55 off; hot pressed nuts, squares and hexagons, tapped, $5 off; blank nuts, $4 off; coach or lag screws, gimlet points, square heads, 65 per cent off.

Cast Iron Pipe.—Bookings for the month, while liberal for this season, probably fell below shipments. Pipe makers, however, are satisfied with their position and, if anything, are firmer in their attitude on prices than heretofore. Most current bids are on the basis of a minimum of $47, Birmingham, although concessions are still made on attractive tonnages. Detroit will probably divide 5350 tons of 6- and 8-in. between the American Cast Iron Pipe Co., the Lynchburg Foundry Co. and the United States Cast Iron Pipe & Foundry Co., but the recommendations of the purchasing committee have not yet been formally accepted. Winthrop Harbor, Ill., took bids yesterday on 408 tons of 6- and 8-in. Desplaines, Ill., also received tenders yesterday from contractors on 350 tons of small diameters up to 10-in.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $58.70 to $59.70; 6-in. and over, $54.70 to $55.70; Class A and gas pipe, $5 extra.

Reinforcing Bars.—Lettings are more numerous, but at the expense of prices, which are even weaker than heretofore. The steel for the Palmer House, involving 1500 tons, has been awarded to Joseph T. Ryerson & Son. The Sanitary District is expected to place considerable more tonnage both for northside sewer work and the McCormick Road. Local warehouse prices range from 2.35c. to 2.40c., Chicago. Lettings include:

Palmer House, Chicago, 1500 tons to Joseph T. Ryerson & Son.

Alton National Bank, Alton, Ill., 100 tons to Joseph T. Ryerson & Son.

Two public school buildings, Oak Park, Ill., 100 tons to Joseph T. Ryerson & Son.

Hotel Androy, Superior, Wis., 200 tons to American System of Reinforcing.

Uptown Theater, superstructure, for Balaban & Katz, 300 tons to American System of Reinforcing.

Sanitary District of Chicago, Elmwood Park outfall sewer, 100 tons to Concrete Steel Co.

Scovill Mfg. Co. warehouse, Chicago, 175 tons to Concrete Steel Co.

H. E. Bell store and office building, Chicago, 225 tons to Concrete Steel Co.

William Wicks store and office building, Chicago, 125 tons of rail steel to Calumet Steel Co.

Chicago Union Station, track slab construction, 100 tons to Concrete Steel Co.

Pending business includes:

St. Scholastica Academy addition, Chicago, 200 tons.

Sanitary District of Chicago, section of McCormick Road, 225 tons, bids taken; another section of the road, 225 tons, bids to be taken July 5.

Grand Trunk terminal addition, Battle Creek, Mich., 186 tons, general contract awarded to Bierd, Lydon & Grandpre, Chicago, plans being revised.

Coke.—Local by-product foundry coke has been reduced 75c. a ton to $10.75 per ton, delivered in Chicago switching district.

Old Material.—A local independent mill has placed a few thousand tons of heavy melting at $14.50 delivered, and additional orders for that grade are expected during the current week. This buying, together with improved sentiment among dealers, has strengthened prices. Railroad lists are bringing higher bids, indicating that the trade is speculating on a further advance in the market. The fact that the Presidential nominations will be out of the way this week is regarded as a good augury. It is pointed out that during the last four Presidential election years heavy melting steel at Chicago started to advance either in June or July.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton	
Iron rails	$16.50 to	$17.00
Cast iron car wheels	16.00 to	16.50
Relaying rails, 56 and 60 lb.	26.00 to	27.00
Relaying rails, 65 lb. and heavier	27.00 to	32.00
Forged steel car wheels	17.00 to	17.50
Railroad tires, charging box size	17.50 to	18.00
Railroad leaf springs, cut apart	17.50 to	18.00
Rails for rolling	15.00 to	15.50
Steel rails, less than 3 ft.	16.50 to	17.00
Heavy melting steel	14.00 to	14.50
Frogs, switches and guards cut apart	14.25 to	14.75
Shoveling steel	13.75 to	14.25
Drop forge flashings	10.00 to	10.50
Hydraulic compressed sheets	10.00 to	10.50
Axle turnings	12.00 to	12.50
Steel angle bars	15.00 to	15.50
Steel knuckles and couplers	17.00 to	17.50
Coil springs	18.50 to	19.00
Low phos. punchings	15.00 to	15.50
Machine shop turnings	7.50 to	8.00
Cast borings	10.25 to	10.75
Short shoveling turnings	10.25 to	10.75
Railroad malleable	16.50 to	17.00
Agricultural malleable	16.00 to	16.50
Per Net Ton		
Iron angle and splice bars	15.50 to	16.00
Iron arch bars and transoms	16.50 to	17.00
Iron car axles	23.00 to	23.50
Steel car axles	16.50 to	17.00
No. 1 busheling	9.00 to	9.50
No. 2 busheling	7.00 to	7.50
Pipes and flues	8.00 to	8.50
No. 1 railroad wrought	12.00 to	12.50
No. 2 railroad wrought	12.50 to	13.00
No. 1 machinery cast	16.75 to	17.25
No. 1 railroad cast	15.75 to	16.25
No. 1 agricultural cast	15.75 to	16.25
Locomotive tires, smooth	15.00 to	15.50
Stove plate	13.50 to	14.00
Grate bars	13.50 to	14.00
Brake shoes	13.50 to	14.00

New York

Plate Prices Weaker—Better Sentiment in Finished Materials

NEW YORK, July 1.—Sales of the past week in this territory amounted to about 12,000 tons and almost nothing has been done in the past two days of this week and no inquiries of importance are pending, one for 1000 tons for a Connecticut melter being probably the largest. It is understood that the A. P. Smith Mfg. Co.'s inquiry for 800 tons of No. 2 and 700 tons of No. 2X for fourth quarter have been satisfied, although part of the tonnage may be delivered in the third quarter. Prices remain stationary with $20.50, eastern Pennsylvania, and $19, Buffalo, being the minimum, at least on ordinary business. There is some scarcity of No. 1X, but No. 2X is obtainable at about the same price as No. 2 plain, especially in the Buffalo district If the Warren Foundry & Pipe Co. is absorbed by the Replogle Steel Co., the former will take a tonnage equal to about the product of one of the Replogle furnaces at Wharton.

We quote delivered in the New York district as follows, having added to furnace price $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 1X fdy., sil. 2.75 to 3.25	$23.77 to $24.27
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.27 to 23.77
East. Pa. No. 2, sil. 1.75 to 2.25	22.77 to 23.27
Buffalo, sil. 1.75 to 2.25	23.91 to 24.41
No. 2X Virginia, sil. 2.25 to 2.75	31.44
No. 2 Virginia, sil. 1.75 to 2.25	30.44

Ferroalloys.—There is one inquiry of 300 to 500 tons for ferromanganese with a fairly liberal number of consumers figuring on carload and smaller lots. There have been sales of a few carload lots but naturally the market is not active. Sales of several hundred tons of spiegeleisen are reported, together with a few odd lots here and there. There continues to be some inquiry in a small way. Prices for both alloys continue firm and unchanged.

Cast Iron Pipe.—There has been a slight improvement in the volume of inquiries for water pipe, but orders are still for small tonnages. It is rumored that the City of New York will be in the market for pipe before long. Makers seem to book about sufficient tonnage to keep a three-month back-log of orders. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $60.60 to $61.60; 4-in. and 5-in., $65.60 to $66.60; 3-in., $75.60 to $76.60, with $5 additional for Class A and gas pipe. Demand for soil pipe is still confined to small lots for prompt shipment. Stocks of jobbers are evidently low, but in the present weak condition of the market there is little inclination to buy ahead. We quote discounts of both Southern and Northern makers, f.o.b. New York, as follows: 6-in., 40 to 40¾ per cent off list; heavy 50 to 50¾ per cent off list.

Warehouse Business.—Purchasing from stock is almost entirely of very small lots. Structural steel business is extremely light as a result of the continuation of the strike in the building trades. Prices have been reduced on cold-rolled shafting 15c. per 100 lb., effective June 26 by one warehouse interest and July 1 by another factor in this market. Black and galvanized sheets continue to hold fairly firm although but little business is reported. While there is no change in the schedule of discounts on wrought iron and steel pipe, numerous instances of shading are reported. We quote prices on page 66.

Finished Iron and Steel.—While local selling offices of leading steel companies are unable to detect any important increase in the number or total volume of incoming orders, they report a somewhat more optimistic sentiment among their customers, due undoubtedly to greater strength in the securities markets, the approaching end of the political conventions, and the fact that most of the steel prices are now so low that buyers do not expect them to go much, if any, lower. Structural steel continues to be the most active of any of the steel products. Although the labor difficulties in New York are not fully settled, the force of men at work is being added to each week, and this progress has encouraged the placing of quite a number of additional contracts for buildings to be erected in the metropolitan district. Those in the structural steel trade predict a steady increase in this class of business, culminating in August or September in a considerable volume which must be let by that time if erection is to be well under way before cold weather. Railroad inquiries for equipment show a slight increase, but passenger cars and repair parts are more in demand than new freight cars. The interest of the local steel trade today (Tuesday) was centered in the opening of bids by the New York Central Railroad on its third quarter requirements, approximately the same as the second quarter inquiry. The amount that will be specified, however, is another matter and will be determined by the road later. The New York Central has also received figures on 15,000 to 22,000 kegs of spikes. The price situation on the principal steel products shows little change, except that plates from Eastern mills are slightly weaker, now being freely quoted at 1.90c. to 2c., Pittsburgh, with some buyers reporting having received quotations of 1.85c. on carload lots. There is still a spread between the prices quoted by Pittsburgh and Eastern mills on structural shapes, amounting to at least $2 to $4 a ton, but on steel bars most of the mills wherever located seem to be adhering firmly to 2.20c., Pittsburgh. Any deviation from this price, it is stated, has been only to special customers. Concrete reinforcing bars are weak, with some variation in quotations. Sheets, hoops and bands, wire products, hot and cold rolled strip steel, cold finished steel bars and pipe continue almost without change. With the exception of sheets, on which there is price irregularity, quotations continue fairly uniform.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.49c. to 2.54c.; plates, 2.24c. to 2.34c.; structural shapes, 2.44c. to 2.54c.; bar iron, 2.44c.

Coke.—Purchases are about as light as at any time in the past few weeks. Prices are still weak and furtheir curtailment of production was made at the end of June. Standard foundry is quoted at $4 to $4.25 per ton in carloads for prompt shipment and standard furnace at $3.50 to $3.75 per ton. By-product is unchanged at $10.41, Newark and Jersey City, N. J.

Old Material.—The market is generally unchanged with business almost at a standstill, except for occasional transactions between brokers and dealers. Much of the purchasing to fill contracts at present seems to be on the contract price, or without profit, brokers apparently anticipating a higher market when consumers again begin to buy. Heavy melting steel of railroad grade or equivalent is moving to Bethlehem, Steelton, Conshohocken, Pottsville, Pa., and Claymont, Del. The prevailing quotations are $14.50 to $15.25 per ton, delivered eastern Pennsylvania. The only noteworthy increase in quotations this week is for specification pipe, which is now bringing $15 per ton, delivered Lebanon or Milton, Pa. Some activity is also reported in machine shop turnings, mixed borings and turnings and stove plate.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$10.25 to $10.75
Heavy melting steel, railroad or equivalent	11.50 to 12.00
Rails for rolling	14.00 to 14.50
Relaying rails, nominal	24.00 to 25.00
Steel car axles	16.00 to 17.00
Iron car axles	23.00 to 24.00
No. 1 railroad wrought	14.50 to 15.00
Forge fire	8.50 to 9.00
No. 1 yard wrought, long	13.50 to 14.00
Cast borings (clean)	8.75 to 9.25
Machine-shop turnings	8.25 to 8.75
Mixed borings and turnings	7.75 to 8.25
Iron and steel pipe (1 in. diam., not under 2 ft. long)	11.25
Stove plate	10.75 to 11.75
Locomotive grate bars	11.50 to 12.50
Malleable cast (railroad)	14.00 to 14.50
Cast iron car wheels	13.50 to 14.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$15.00 to $15.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	13.00 to 13.50
No. 1 heavy cast, not cupola size	10.00 to 10.50
No. 2 cast (radiators, cast boilers, etc.)	12.00 to 12.50

Cincinnati

Further Price Concessions on Moderate Business in Pig Iron

CINCINNATI, July 1.—A sanitary ware manufacturer bought 5000 tons of pig iron from Ironton district furnaces last week, at prices ranging between $19 and $20. A furnace manufacturer took 400 tons of Northern at $19.50, Ironton, while numerous smaller lots were booked at a range of $19 for resale iron, to $20 for direct furnace iron. The furnace quotation now is $19.75, but the market is relatively weak at that figure as $19 can be done with brokers. Quotations on Southern irons range from $18.50 to $19, and a sanitary company bought 12,000 at $18.50 base and $19 for No. 2X. There is no activity in basic or Bessemer grades, and only occasional carload lots of silveries are sought. Inquiry is falling off. A northern Ohio melter is in the market for 1500 tons of malleable, and there are several inquiries for 100 to 200 tons. The melt of pig iron in the district has not decreased materially in the past few weeks. Belfont furnace blew out for relining on Monday, leaving three steel works furnaces, one silvery and one foundry producer, active in the district.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$22.55 to $23.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	23.05 to 23.55
Ohio silvery, 8 per cent	32.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	21.27 to 22.27
Basic Northern	21.27 to 22.27
Malleable	21.27 to 22.27

Sheets and Tin Plate.—Sales were in a little better volume during the latter part of the week, and sales representatives are encouraged to believe that the turn for the better has come. All of the mills in southern Ohio and northern Kentucky will be closed down next week, and some of them may remain down for a second week, depending on orders coming in in the meantime. Prices generally quoted are 2.75c for blue annealed, 3.60c for black and 4.75c to 4.80c for galvanized.

Reinforcing Bars.—Waverly tuberculosis sanitarium directors at Louisville rejected all bids on the new building, and will likely call for new figures. The bids were within the estimates, but were not complete. This involves 500 tons. Award of 1000 tons of bars for the Cincinnati Rapid Transit Loop will be made today, and it is expected will go to a central Ohio mill. Prices continue at 2c for rail steel bars and 2.20c for bars from new billets.

Warehouse Business.—Local jobbers report business slowing down, but the total sales for June are slightly ahead of May. Demand is for small tonnages only. Prices are steady.

Cincinnati jobbers quote: Iron and steel bars, 3.40c.; reinforcing bars, 3.50c.; hoops, 4.45c.; bands, 4.15c.; shapes, 3.50c.; plates, 3.50c.; cold-rolled rounds, 4.15c.; cold-rolled flats, squares and hexagons, 4.65c.; open-hearth spring steel, 5c. to 6c.; No. 10 blue annealed sheets, 4c.; No. 28 black sheets, 4.70c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, 3.30c.; common wire nails, $3.30 per keg base; cement coated nails, $3 per keg.

Structural Activity.—A number of fair-sized awards were made last week, but inquiries are very light. The Southern Railroad is expected to award 5000 tons of bridge work today.

Finished Materials.—There was little of interest in the steel market during the past week, and carload orders were the rule. Persistent reports of plates being offered at 2.10c for moderate tonnages are current, and it is said that this price has been done on a 200-ton order. The general asking price, however, continues to be 2.15c. There is no indication of 2.20c having been bettered on going business for shapes and bars, but inquiries for tonnages of these products are lacking; so it is difficult to get a line on what actually can be done. Wire nails and wire products are in only fair demand, with prices showing little change. There is no activity in track materials, and light rails are not in demand.

Coke.—A sale of 1700 tons of Connellsville furnace coke for second half was made to a Michigan melter. Several other second half contracts for both beehive and by-products fuels were negotiated, but as a rule the market is quiet, and activity is confined to small tonnages for immediate shipment. Prices are unchanged.

Connellsville furnace, $3.15; foundry, $4.50; New River foundry, $9 to $10; Wise County furnace, $3.75; foundry, $4.50; by-product foundry, $7.50; Connellsville basis.

Old Material.—There was considerably more buying on the part of dealers in scrap in the Cincinnati district, but consumer buying is still light. Sentiment in the trade is noticeably improved, and optimism regarding the future is more pronounced. Prices, on the basis of purchases made, have advanced 50c. during the past week, and indications point to further advance. Whether they will be maintained depends on the amount of buying by consumers.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	$12.50 to $13.00
Scrap rails for melting	12.00 to 12.50
Short rails	17.00 to 17.50
Relaying rails	28.50 to 29.00
Rails for rolling	14.00 to 14.50
Old car wheels	13.00 to 13.50
No. 1 locomotive tires	14.00 to 14.50
Railroad malleable	15.50 to 16.00
Agricultural malleable	14.00 to 14.50
Loose sheet clippings	8.50 to 9.00
Champion bundled sheets	10.50 to 11.00
Per Net Ton	
Cast iron borings	9.00 to 9.50
Machine shop turnings	8.00 to 8.50
No. 1 machinery cast	18.00 to 18.50
No. 1 railroad cast	14.50 to 15.00
Iron axles	21.00 to 21.50
No. 1 railroad wrought	10.50 to 11.00
Pipes and flues	7.50 to 8.00
No. 1 busheling	9.50 to 10.00
Mixed busheling	7.00 to 7.50
Burnt cast	10.50 to 11.00
Stove plate	10.50 to 11.00
Brake shoes	11.50 to 12.00

Buffalo

Fair Inquiry for Pig Iron, with Prices Unchanged—More Demand for Shapes

BUFFALO, July 1.—Current inquiry for pig iron ranges between 15,000 and 20,000 tons. A railroad in central Pennsylvania is inquiring for 2000 tons and a railway supply house in this State seeks 1000 tons of foundry. A Canadian agricultural implement maker seeks 700 tons of foundry and an allied industry wants to place 500 tons. Other inquiries are for 800 tons, 750 tons, 600 tons, two for 500 tons and one for 400 tons. The principal selling was done by one interest which sold an aggregate of 5000 to 6000 tons, including one for 750 tons. The price remains about the same with $19 being done freely on No. 2 plain, 1.75 to 2.25 silicon. Differentials are being taken in some instances. Furnace operation is the same, though another Rogers-Brown stack is scheduled to be banked July 10.

We quote f.o.b., gross ton, Buffalo, as follows:

No. 1 foundry, sil. 2.75 to 3.25	$19.00 to $20.00
No. 2 foundry, sil. 2.25 to 2.75	19.00 to 19.50
No. 2 plain, sil. 1.75 to 2.25	19.00
Basic	19.00
Malleable	19.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—Inquiry in the field of fabricated structural shapes is better than it has been for some time. One 200-ton order for a Jamestown factory has been placed with a Buffalo fabricator and small jobs are in the offing. Another fabricator is figuring on one or two other jobs of higher tonnage. Four lots of road work are pending. Each job runs between 50 and 125 tons. A bar mill sees better business ahead and an improvement during the week. All the lots sought are small, but more buyers are inquiring. This mill states that 2.20c. is its minimum, though it is probable that tonnage might bring out better prices than this elsewhere. Pipe specifications are better. Orders are for carloads and there are no price changes. Sheet prices range about the same, though 3.65c. and 4.80c. have been shaded a little by mills which desired some heavy gage material for warming purposes. Contracts for third quarter bolts are being made on the basis of second quarter contracts, i.e., 60 and 30 off for large ma-

chine bolts. Some current specifications have been accepted on second quarter contracts at better discounts than this.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.30c.; galvanized steel sheets, No. 28 gage, 6.10c.; black sheets, No. 28 gage, 5c.; cold-rolled and round shafting, 4.45c.

Old Material.—The market which appeared to be growing better earlier in the week, has sunk to its previous levels. While dealers are doing a considerable amount of buying at low prices, mills are practically out of the market. Dealers are buying for yard-stocking purposes. Coming railroad lists are reported to be very heavy and it is currently reported that the prices will be considerably above list. Dealers believe a quiet period will ensue for the remainder of the week and over the Fourth, but expect a brisker period in about a month's time. A large consumer here continues to pick up small tonnages at bargain prices. Some heavy melting steel has been sold to Weirton at $16.50 and a local mill has bought some hydraulic compressed sheets at $12.

We quote f.o.b., gross ton, Buffalo, as follows:

Heavy melting steel	$13.50 to $14.50
Low phos., 0.04 and under	17.00 to 18.00
No. 1 railroad wrought	12.50 to 13.00
Car wheels	17.50 to 18.00
Machine shop turnings	10.00 to 10.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	12.00 to 13.00
Stove plate	15.00 to 16.00
Grate bars	14.50 to 15.00
Bundled sheets	8.00 to 9.00
Hydraulic compressed	13.50 to 14.00
Railroad malleable	18.00 to 18.50
No. 1 machinery cast	16.50 to 17.50

St. Louis

More General Buying of Pig Iron, but Prices Are Still Lower

ST. LOUIS, July 1.—More orders for pig iron were placed during the last week than for some time, but this was brought about by a cut in prices. However, as there have been cuts from time to time without causing important buying, makers of pig iron take the purchases of the week and the increase in inquiries to mean that melters have about concluded that prices have reached bottom. Chicago makers are said to have made other sales at $19, f.o.b. that point. Of course, the St. Louis maker was compelled to meet that price to get business. A leading Southern interest sold 300 tons of iron at less than $18, Birmingham, for rail and water shipment. The St. Louis Coke & Iron Co. reports the sale of 600 tons of foundry iron to a radiator corporation for prompt shipment; 200 tons of wheel iron to a car wheel maker; 200 tons for third quarter; 100 tons for prompt shipment and 150 tons for last quarter, respectively, to three St. Louis job foundries, 500 tons of foundry iron to an Illinois melter for shipment through July and August, and 500 tons in carload lots for prompt shipment to Kansas, Oklahoma and Missouri points. Pending inquiries include: 300 to 500 tons of malleable for prompt shipment for a California melter; 600 to 700 tons of malleable for July and August shipment to an Illinois melter; 400 tons of foundry iron for last half delivery to an Illinois melter; 100 to 200 tons high silicon iron for early shipment to a St. Louis melter; 100 to 150 tons of foundry iron for shipment during July and August to a Kansas melter; 100 to 200 tons of foundry iron for prompt shipment to a Kansas City job foundry. A few job foundries are asking makers to hold up shipments, while many more have anticipated shipments against contracts.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$21.16 to $21.56
Northern malleable, sil. 1.75 to 2.25	21.16 to 21.56
Basic	21.16 to 21.56
Southern fdy., sil. 1.75 to 2.25 (rail)	23.17
Southern foundry, sil. 1.75 to 2.25 (rail and water)	21.28
Granite City iron, sil. 1.75 to 2.25	22.81

Finished Iron and Steel.—The contract for 400 tons of reinforcing bars for the Mayfair Hotel, St. Louis, went to the Laclede Steel Co. A Decatur, Ill., concern bought 100 tons of reinforcing bars (billets). Fabricators of structural steel are buying more freely of material. There is no business in sheets. No railroad inquiries are pending.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled, one pass, 5c.; cold rolled rounds, shafting and screw stock, 4.15c.; structural rivets, 3.90c.; boiler rivets, 4.10c.; tank rivets, ⅞-in. and smaller, 60 per cent off list; machine bolts, 55 and 5 per cent; carriage bolts, 40-5 per cent; lag screws, 60 and 5 per cent; hot pressed nuts, squares or hexagons, blank or tapped, $3.50 off list.

Coke.—Dealers in domestic grades are showing more interest in their early fall requirements, and orders have been sufficiently large to cause by-product producers to draw on their piles. Foundry grades are only in fair demand.

Old Material.—There still is a short interest in some specialties, and dealers are paying more for them. Despite lower prices for pig iron and lack of general buying by consumers of material in this district, dealers continue optimistic. Dealers feel that with any kind of a buying movement prices will advance materially above present levels. The biggest railroad list in some time was issued this week by the Pennsylvania System, 40,000 tons. The Terminal Railway Association, St. Louis, lists 1700 tons, a large list for that concern.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$12.00 to $12.50
Rails for rolling	14.50 to 15.00
Steel rails less than 3 ft.	16.00 to 16.50
Relaying rails, 60 lb. and under	25.00 to 26.00
Relaying rails, 70 lb. and over	32.50 to 33.50
Cast iron car wheels	14.50 to 15.00
Heavy melting steel	12.75 to 13.25
Heavy shoveling steel	12.75 to 13.25
Frogs, switches and guards cut apart	13.75 to 14.25
Railroad springs	17.50 to 18.00
Heavy axles and tire turnings	11.00 to 11.50
No. 1 locomotive tires	14.50 to 15.00
Per Net Ton	
Steel angle bars	13.00 to 13.50
Steel car axles	16.00 to 16.50
Iron car axles	21.00 to 21.50
Wrought iron bars and transoms	16.00 to 16.50
No. 1 railroad wrought	10.25 to 10.75
No. 2 railroad wrought	11.50 to 12.00
Cast iron borings	8.50 to 9.00
No. 1 busheling	11.00 to 11.50
No. 1 railroad cast	16.00 to 16.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	12.50 to 13.00
Machine shop turnings	5.50 to 6.00
Champion bundled sheets	7.50 to 8.00

Cleveland

Large Pig Iron Buying Movement Is Tapering Off—Ore Shipments Decreasing

CLEVELAND, July 1.—Sales of pig iron by leading Cleveland interests aggregated approximately 325,000 tons in June. Buying has continued in good volume in the past week, but inquiries are lighter and there are indications that the buying movement that started the first of the month is subsiding. One interest sold over 25,000 tons in the past week and another 20,000 tons in foundry and malleable grades, mostly the former. Several sales in lots up to 1000 tons and over were made in northern and central Ohio, but the largest share of the business came from Michigan, Indiana, the Pittsburgh district and New England. Sales include a 3000 and a 2000-ton lot in the Pittsburgh district and a 2500 and a 2000-ton lot in New England. Most of the contracts were for the third quarter though some were for the last half. Some additional sales were made to foundries affiliated with the automotive industry. Pending inquiries include one for 3000 tons of malleable iron from a northern Ohio consumer and one from a Cleveland foundry for 500 tons of foundry iron. With the start of the third quarter, foundries are carrying over a great deal of iron on second quarter contracts and many consumers are still holding back on shipments. Prices

showed little change during the week. Foundry and malleable iron are commonly quoted at $19, Lake and Valley furnace, and while some producers are not shading that price, there is evidence that others are going lower on quotations to consuming points where they have a freight disadvantage. In Cleveland the $20 price for local delivery reported last week has now become an open quotation by one producer, but another is still asking $20.50. There is no activity in steel making iron and basic is unchanged at $19. Further weakness has developed in Southern iron. While small lot sales have been made a $18.50 a fair sized lot would now doubtless bring out an $18 price. Pickands, Mather & Co. blew out their B furnace in Toledo Monday. This will be rebuilt and enlarged and will not be ready to resume operations until about Jan. 1.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$19.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	$20.00 to 20.50
Southern fdy., sil. 1.75 to 2.25	24.00 to 24.50
Malleable	20.00 to 20.50
Ohio silvery, 8 per cent	33.52
Stand. low phos., Valley furnace	27.00 to 27.50

Iron Ore.—Shipments of Lake Superior ore during June are estimated at close to 7,400,000 tons as compared with 6,583 tons during May. Further reductions were made in the shipping schedules for ore during the past week and owing to the light demand for vessel capacity in the ore trade, more boats are being laid up. Four steamers and three barges of the Pittsburgh Steamship Co. were ordered sent to the docks during the week, making 17 of that company's vessels to be tied up and a total of about 70 freight boats out of service.

Sheets.—Several of the Ohio sheet mills have shut down for this week and some will not start up for two weeks. The volume of business is very light, but prices are fairly steady with few concessions of more than $1 a ton from regular quotations.

Reinforcing Bars.—The demand is fair but the market lacks firmness. While 2.15c. is fairly common on billet steel bars, there are reports of a 2.10c. price. Rail steel bars range from 2c. to 2.10c., but the lower price is being shaded.

Semi-Finished Steel.—Specifications for sheet bars show improvement, but many consumers still have considerable steel coming on their second quarter contracts. There is no new inquiry. We note the sale of 100 tons of billets at $38, Cleveland.

Bolts, Nuts and Rivets.—Although some manufacturers report a little improvement in small lot orders for bolts and nuts, the demand is still very light. Concessions from regular discounts are being made by some makers. Leading bolt and nut plants are now operating not over 30 to 40 per cent of capacity. There is little activity in rivets, although the recent announcement of a 2.60c. price for small rivets has brought out some contracts for the third quarter.

Finished Material.—Activity in structural material was the most important feature of an otherwise dull finished steel market. An inquiry is out for 2500 tons of structural steel for a new steam power house for the Cleveland Electric Illuminating Co. and for 1000 tons for an ore bridge to replace one recently destroyed at Ashtabula, Ohio. The destruction caused by the tornado that swept sections in northern Ohio Saturday will necessitate a great deal of reconstruction work. However, outside of 2000 tons of material that will be required for rebuilding two ore bridges at Lorain, it is not expected that this work will require a great deal of steel. Additional inquiries have come out for Lake boats and four boat building projects are now pending, although none of them is in more than a preliminary stage. At least one of the projects was up early in the year but was dropped. It is evident that the lower cost of steel is responsible for these tentative shipbuilding projects. The general run of steel orders continues light with the volume about the same as during the previous few weeks. Consumers are buying only in small lots for early requirements. Plates show a slight improvement with a few new inquiries for lots of around 100 tons. In the automotive field, no increase in car production in the Detroit territory is reported and the outlook is not promising. Prices show little change. Plates commonly range from 2.10c. to 2.20c., but a 2c. price occasionally crops out. Hot-rolled strip steel is weak with quotations as low as 2.40c. on strips and bands, on which some mills have waived extras. Light hoop is fairly firm.

Jobbers quote steel bars, 3.21c.; plates and structural shapes, 3.31c.; No. 28 black sheets, 4.55c.; No. 28 galvanized sheets, 5.65c.; No. 10 blue annealed sheets, 3.60c. to 3.76c.; cold-rolled rounds, 4.10c.; flats, squares and hexagons, 4.60c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 3.96c.; narrower than 1 in. or lighter than No. 20 gage, 4.46c.; No. 9 annealed wire, $3.30 per 100 lb.; No. 9 galvanized wire, $3.75 per 100 lb.; common wire nails, $3.40 base per 100 lb.

Coke.—The demand for foundry coke continues light, with prices unchanged at $4.50 to $6 for standard Connellsville makes. Some contracts for Wise County foundry coke were placed during the week at $5.50.

Old Material.—The market has been duller than usual the past week, the only activity on the part of consumers being the reported purchase of heavy melting steel scrap by a Massillon consumer. Locally there is a limited amount of trading between dealers. The volume of business is so small that quotations, which are unchanged, are nominal, but the market is firm.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$14.00 to $14.25
Rails for rolling	15.50 to 16.00
Rails under 3 ft	16.25 to 16.75
Low phosphorus melting	16.50 to 16.75
Cast iron borings	13.50
Machine shop turnings	12.00 to 12.25
Mixed borings and short turnings	13.25 to 13.50
Compressed sheet steel	12.00 to 12.25
Railroad wrought	12.00 to 12.25
Railroad malleable	17.00 to 17.25
Light bundled sheet stampings	11.50 to 12.00
Steel axle turnings	13.25 to 13.50
No. 1 cast	20.00 to 20.50
No. 1 busheling	12.75 to 13.00
Drop forge flashings	10.25 to 10.50
Railroad grate bars	13.50 to 13.75
Stove plate	13.25 to 13.50
Pipes and flues	10.00 to 10.25

Boston

Pig Iron Buying Continues of Good Volume—Prices Steadier

BOSTON, July 1.—Buying of pig iron continues of good volume, but the market is much less active than a week ago, and prices are steadier now that large buyers have covered their requirements. Although most of the iron bought in June is for third quarter delivery, virtually all large consumers have sufficient in stock or on order to last the remainder of 1924 unless there is a decided revival in general business. It now develops the H. B. Smith Co., Westfield, Mass., purchased three lots of 2500 tons each, one from an eastern Pennsylvania and the other two from Northern furnaces. Buffalo silicon 2.75 to 3.25 sold the past week to two Connecticut consumers at $19.50 furnace or $24.41 delivered. A York State furnace sold 2000 tons No. 2X to a textile machinery maker at the equivalent of $18.25 furnace Buffalo. Buffalo No. 2X is held at $19 to $19.50 and No. 1X at $19.50 to $20.50. Pig iron production in that district is falling off and furnaces are well sold up on No. 2X and higher silicons. Little eastern Pennsylvania iron is offered in New England. About 400 tons of No. 2X French iron sold at $21 delivered Providence, R. I. Otherwise foreign iron is inactive.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 2.25 to 2.75	$24.65 to $25.65
East. Penn., sil. 1.75 to 2.25	24.15 to 25.15
Buffalo, sil. 2.25 to 2.75	23.91 to 24.41
Buffalo, sil. 1.75 to 2.25	23.91
Virginia, sil. 2.25 to 2.75	31.42 to 32.42
Virginia, sil. 1.75 to 2.25	30.92 to 31.92
Alabama, sil. 2.25 to 2.75	30.10 to 31.10
Alabama, sil. 1.75 to 2.25	29.60 to 30.60

Warehouse Business.—A general reduction of 30c. to 40c. a 100 lb. on tire steel, 20c. on steel bands and hoops, and 15c. on soft steel, concrete, refined and best refined bars, steel flats, toe steel, structural steel and plates has been made by warehouse interests. The

change is the first one made in warehouse prices in months, and is due, according to general reports, to new prices put out by the United States Steel Corporation's subsidiary warehouses. Galvanized roofing nails, ½-in. head, have been cut 40c. a keg. Otherwise warehouse quotations remain as heretofore. The demand for products is only fair at best. Stocks in distributors' hands are small and more or less broken.

Coke.—Indications are the New England Coal & Coke Co. and the Providence Gas Co. will make no change in their price on by-product foundry coke, which is $12 a ton delivered within New England. With a still further decrease in the aggregate New England iron melt to about 33 per cent of capacity, foundries are specifying against contracts in a limited manner. The Saco Lowell Shops, with plants at Newton and Lowell, Mass., and at Biddeford, Me., closed July 1 for three weeks, and the Standard Horsehoe Co., Wareham, Mass., for two months, these two developments serving to pull down the weekly ratio of aggregate melt.

Old Material.—Inactivity features the old material market, with prices generally unchanged. Quotations on machine shop turnings and mixed borings and turnings, however, are easier. Less heavy melting steel is moving than noted in weeks, anticipated buying for eastern Pennsylvania delivery not having developed. The General Electric Co., West Lynn, Mass., this week will close on a small tonnage of No. 1 machinery cast. No. 2 machinery cast is a drug on the market. The Watertown, Mass., arsenal is asking bids on a long list of old materials, and the Bethlehem Shipbuilding Co., Ltd., Fore River, Quincy, Mass., plant on machine shop turnings and heavy melting steel.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$20.00 to $21.50
No. 2 machinery cast	17.50 to 18.00
Stove plates	14.50 to 15.00
Railroad malleable	16.50 to 17.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.50 to $11.00
No. 1 railroad wrought	12.50 to 13.00
No. 1 yard wrought	11.50 to 12.00
Wrought pipe (1-in. in diam., over 2 ft. long)	9.50 to 10.00
Machine shop turnings	7.25 to 7.50
Cast iron borings, chemical	9.00 to 9.50
Cast iron borings, rolling mill	8.00 to 8.50
Blast furnace borings and turnings	6.50 to 6.75
Forged scrap and bundled skeleton	7.00 to 8.00
Shafting	15.00 to 15.50
Street car axles	15.00 to 15.50
Rails for rolling	12.00 to 12.25

Birmingham

Better Feeling in Pig Iron Market but Curtailment of Production Planned

BIRMINGHAM, ALA., July 1.—Better feeling in the pig iron market in the South is again told of and in the same breath there is announcement that production is to be curtailed. Inquiries are more numerous, but sales show no larger aggregate. Quotations continue weak and $18.50 to $19 is the range on No. 2 foundry. Pig iron sales have increased in the South and a considerable tonnage is reported sold this week. No change in the decision that there shall be no iron piled up at present high costs of production is announced. Iron cannot be shipped in competition with the Northern product, this section noting a sale of Northern iron into a territory near the Ohio River gateway that heretofore has been getting its supply from the Birmingham district. Home melters are looking a little ahead and claim to see signs of an improving market, but the actual new business has not come in with any rush.

We quote per gross ton, f.o.b. Birmingham district furnace as follows:

No. 1 foundry, 2.25 to 2.75 sil.	$19.00 to $19.50
No. 2 foundry, 1.75 to 2.25 sil.	18.50 to 19.00
Basic	18.50 to 19.00
Charcoal, warm blast	31.00

Steel.—Continued quietness obtains in the steel market, though many of the plants are in steady operation. The Tennessee Coal, Iron & Railroad Co. shows no change for the past several weeks in production and shipments, operating at about 85 to 90 per cent capacity. The Gulf States Steel Co. is operating about one-third capacity in open hearth plants and in finishing mills with fair tonnage in warehouse.

Cast Iron Pipe.—Inquiries are more frequent, specifications more satisfactory and general trade improved with the cast iron pipe manufacturers, makers of pressure pipe. Centrifugal pipe is being sought. Quotations show decline of $1 per ton and more, 6 in. and over pipe now selling at $47 to $48. No cast iron pipe is on hand and plants will have to continue activity in order to keep apace with the business booked.

We quote class B, 4-in. water, $51.00 to $52.00; 6-in. and over, $47.00 to $48.00; class A, $5 higher; standard soil pipe, $60; heavy gage, $45; standard fittings, $110.

Coke.—The lower prices for coke have brought about no increase in the coke buying in this district. The make is but little disturbed so far and the prospects are there will be no material change soon in this regard. Three of the larger by-product coke oven plants must continue operation throughout the year because of the sale of by-products. In one or two places there has been a little coke stocked, but the total is not alarming. The Sloss-Sheffield Steel & Iron Co. has started a movement to sell coal and coke direct to consumers, erecting bins at the city blast furnaces. Coke production is being curtailed, several batteries of by-product plants being shut down. Foundry coke can be bought at $5.50 and furnace coke at $5. Contract foundry coke is possible at $5.

Scrap.—The scrap iron and steel market in Alabama continues quiet, No. 1 cast and stove plate moving in small quantities and dealers who sold at much higher prices several months ago are delivering. The quotations given on various scrap products show readjustment so far as delivery and non-delivery go. Heavy melting steel at $11 has not brought about any buying. The lower prices on pig iron have not caused less scrap to be used.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	11.00 to 12.00
Railroad wrought	11.00 to 12.00
Steel axles	17.00 to 18.00
Iron axles	19.00 to 19.50
Steel rails	11.00 to 12.00
No. 1 cast	15.00 to 16.00
Tram car wheels	15.00 to 16.00
Car wheels	15.00 to 15.50
Stove plate	14.00 to 15.00
Machine shop turnings	6.00 to 7.00
Cast iron borings	9.00 to 10.00
Rails for rolling	15.00 to 16.00

Youngstown Scrap Market

YOUNGSTOWN, July 1.—Though district steel companies are still buying very little scrap material, the market shows a decidedly firmer tone. Middle interests are in the market for material, where advantageous purchases may be closed. One of the largest dealers in this territory is in the market for 25,000 tons of No. 1 heavy melting scrap, for which it is willing to pay from $16 to $17. An official states the company will pay the higher price for prime scrap of this grade. This tonnage is not being sought against any immediate requirement, but for stock purposes.

Dealers are paying around $13.50 for hydraulically compressed sheets. The Weirton Steel Co. is understood to have made a recent purchase of hydraulic sheets, paying $15.50.

One of the principal scrap interests in the Youngstown district reports a much larger volume of inquiry for material, and looks for moderate buying in July, gathering strength later in the year. This company expects large business the first months of 1925 and is laying its plans accordingly.

Philadelphia

Improvement in Buying, Though Slight, Cheers Trade Considerably

PHILADELPHIA, July 1.—The improvement in pig iron buying which set in a few weeks ago continues to make headway, and there are more definite signs this week of spotty betterment in the steel industry. It cannot be said that tonnage being placed on mills' books is showing much increase, but prospects are more numerous, particularly in construction work. Structural steel, in fact, has shown the only noticeable gain of any of the steel products. Under sharp competition, however, the spread in prices on plates and shapes between Eastern mills and those of the Pittsburgh-Youngstown district has widened. Eastern mills have gone as low as 1.85c., Pittsburgh, on plates and 1.95c. and 2c., Pittsburgh, on structural shapes. In fact, 2.20c., Eastern mill, has been quoted on plain material. On plates for shipment to California 2.35c., delivered Pacific Coast ports, has been named by an Eastern mill. Steel bars have also weakened in the past week, and while the smaller lots are still quoted at 2.20c., Pittsburgh, larger lots have been sold at 2.15c., and on concrete reinforcing bars even lower prices have been given.

Pig Iron.—Considerable inquiry is pending, particularly from some of the leading melters of New England. Inquiries range from a few hundred tons up to 2500 tons. While there is only one of the latter size there are several of 500 and 1000 tons. The amount of business which has been put on furnace books in the past few weeks has been fairly large, sufficiently so to place some of the furnaces in a more independent position relative to new business, and prices have stiffened slightly. There has been no actual advance, for No. 2 plain iron is still obtainable at $20, furnace, and No. 2X at $20.50, furnace, but some furnaces are quoting slightly higher prices and getting them, one leading producer being on a $21 base. There have been fair-sized sales of malleable iron at about $20.50 to $21, furnace, and a sale of 1000 tons of copper bearing low phosphorus iron, the latter at $24.50, furnace. The only transaction in basic iron was the sale of several hundred tons of Indian iron to an Eastern steel company.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$20.76 to $22.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.26 to 22.63
East. Pa. No. 1X	21.76 to 23.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	30.17 to 31.17
Virginia No. 2X, 2.25 to 2.75 sil.	30.67 to 31.67
Basic delivered eastern Pa.	21.00 to 21.50
Gray forge	22.00 to 22.50
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.00 to 25.00

Ferroalloys.—Carload business is the only activity in ferromanganese and spiegeleisen is scarcely in demand at all. Reports of slight concessions on ferromanganese are not confirmed by sellers. We continue to quote domestic and foreign alloy at $107.50.

Semi-Finished Steel.—Very little business is being done in billets, which remain nominally at $38, Pittsburgh, for rerolling quality and $43, Pittsburgh, for forging quality.

Plates.—All of the Eastern mills will be shut down from Thursday night until Monday morning. The plant of the Lukens Steel Co. has been shut down all of this week. It is expected that when rolling is resumed next Monday there will be slightly fuller schedules. Some improvement in inquiry and sales is reported by some of the Eastern mills, but business has been stimulated largely by further price concessions. On ordinary lots, quotations of 1.90c. to 2c., Pittsburgh, are readily obtainable, while on fairly large lots on which sharp competition developed 1.85c., Pittsburgh, has been quoted. Eastern mills learn that plates have been quoted in California at 2.35c., delivered Pacific Coast ports. Deducting the conference freight rate of 40c. per 100 lb., this is equivalent to 1.95c., Atlantic port. It is not considered likely that Pittsburgh mills would make such a low price for Pacific Coast shipment, as this price would be equivalent to 1.63c., Pittsburgh. The Baldwin Locomotive Works has received a contract from the Mexican Government for 3000 freight cars, but whether these will be built at the Baldwin shops or sub-let to a car-building company has not been made known. The Cramp shipyard, which has received a contract to build a large passenger liner for the Matson Navigation Co., will order the plates and shapes, about 6500 tons, from the Carnegie Steel Co.

Structural Material.—More projects are being figured on by local fabricators, and while there is such sharp price competition that the successful bidders are taking jobs almost at cost, there is, nevertheless, a feeling of returning optimism in the steel trade because of the growing amount of work. The Phoenix Bridge Co. was low bidder on three bridges over the Chesapeake and Delaware Canal. The Penn Athletic Club, 4300 tons, is being figured, also the addition to the Hotel Dennis, Atlantic City, 2000 tons. Eastern mills are making very low prices on plain material, 2c., Pittsburgh basis, being quite freely quoted, while on especially attractive jobs this price has been sliced at least $1 a ton. One Eastern mill has on a few occasions quoted 2.20c., mill, on shapes.

Bars.—Steel mills are no longer able in all cases to get 2.20c., Pittsburgh, for soft steel bars. The price has been held rather firmly at this figure for a good many weeks, but a break to 2.15c., Pittsburgh, on some of the more attractive lots has made this an open price now, but it is not being given to the small-lot buyer. Keen competition for sizable lots of concrete reinforcing bars has been largely instrumental in breaking the bar price, concrete bars having been quoted as low as 2.10c. Bar iron is still being held at 2.10c., Pittsburgh, by Eastern mills, but there is very little buying.

Old Material.—On a moderate volume of buying, the scrap market has taken on renewed strength. A number of price advances have occurred since our report of a week ago. One or two mills which would not pay above $15 for No. 1 heavy melting steel are now offering $15.50, but it is not expected that much business will result because the price ideas of brokers and dealers are at least 50c. higher. Most of the better grades of melting steel are being stored in dealers' yards and will not be sold until there is a substantial advance in prices. Steel shafting is scarce and in good demand, and the price range quoted is $22 to $24 per gross ton.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$15.50
Scrap rails	15.50
Steel rails for rolling	$17.00 to 17.50
No. 1 low phos., heavy 0.04 and under	19.00 to 20.00
Couplers and knuckles	18.50 to 19.00
Cast-iron car wheels	17.00 to 17.50
Rolled steel wheels	18.50 to 19.00
No. 1 railroad wrought	17.00 to 18.00
No. 1 yard wrought	16.00 to 16.50
No. 1 forge fire	13.00 to 13.50
Bundled sheets (for steel works)	12.50
Mixed borings and turnings (for blast furnace use)	11.00 to 11.50
Machine shop turnings (for steel works use)	12.50
Machine shop turnings (for rolling mill use)	12.50 to 13.00
Heavy axle turnings (or equivalent)	14.50 to 15.00
Cast borings (for steel works and rolling mills)	13.50 to 14.00
Cast borings (for chemical plants)	14.00 to 14.50
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel plants)	15.50 to 16.00
Railroad grate bars	14.50 to 15.00
Stove plate (for steel plant use)	14.50 to 15.00
Wrought iron and soft steel pipes and tubes (new specifications)	15.00 to 15.50
Shafting	22.00 to 24.00
Steel axles	20.00 to 21.00

Imports.—Iron ore imported at Philadelphia last week included 12,770 tons from French Africa; 500 tons of manganese ore came from Calcutta; 1200 tons of chrome ore from Greece; 5000 tons of chrome ore from Portuguese Africa; 36 tons of steel beams from France.

San Francisco

Many Building Projects, but Iron and Steel Market Is Not Active

SAN FRANCISCO, June 25.—The steel and iron market shows some symptoms of quieting down, not so much as to the quantities of material at present being handled, but in the volume of new orders being booked. Dealers talk about the usual summer period of inactivity and optimistic expressions are heard on all sides, but the fact remains that a well-defined undercurrent of business quiet is easily recognizable in some of the leading branches of the trade. On the other hand, however, the new construction work both public and private already projected in so many parts of the State is voluminous, and of such character that it will provide business for at least a year. It has been estimated that in the aggregate this business, for which plans are now nearly ready for figuring, will require more than 26,000 tons of structural steel. Of this steel, some 6000 tons will be allotted to four new edifices in this city, nearly 4000 tons to Oakland, 4500 tons divided between Stockton, Sacramento and Marysville, while new municipal and county buildings, mostly schools, in 11 counties in central and northern California will readily absorb the remainder. It will be seen, therefore, that while new orders are not being booked for the present as numerously as two months ago, the trade on this coast will probably be in as good, if not better, shape than in some other parts of the country during the third and fourth quarters of the current year.

Pig Iron.—While the demand is not heavy, there is a fair volume of business in progress. Both mills and foundries are moderate buyers and as they are running about an average of 70 per cent capacity, they must maintain their supplies of material. The keen competition between importers of English and Scotch and Continental iron is a feature of present trade conditions. Liberal tonnages of both have come to hand recently and more is on the way. Comparatively little of the 12,000 tons of foundry iron ordered in Belgium early in May has arrived, but it is practically all sold and additional orders are expected soon to be placed for delivery during the third quarter at this port. It is said that this iron can be landed here at about $24.50 per gross ton, less duty. Consumers are buying it readily at from $27.50 to $29 per ton and the quoted rates are firmly held. Sales of English and Scotch iron continue steady, with the price about $30 to $31.50 per ton. Some iron from China is expected early in July, but the tonnage is not stated.

Coke.—Recent sales have been rather light but importers are not complaining about dullness. The tonnage arrivals of the last few weeks have found ready sale at prices around $18 to $19 for the desirable grades. A fair tonnage is on the way and the outlook for third quarter deliveries seems to indicate an enlarged business as compared with the first half of the year. Domestic coke moves rather slowly and mostly in small quantities.

Finished Steel and Iron.—Prices show a little easier tone in several lines, with the demand rather unevenly distributed among the available variety of products. For instance, the sales of bar iron for concrete reinforcement, also wire for the same purpose, continue good, while merchant bars are less active. Prices on the latter are lower, some sales being reported as low as 2.50c. f.o.b. cars, in quantities to suit. This figure is said to be named to meet the prices on material imported from Europe. Dealers in the foreign material have cut their selling figures also and some sales are reported as low as 1.95c., but the quality at the latter price is claimed by some dealers to be below the average and only usable for some purposes. The demand for nails continues steady, with prices well sustained and a good inquiry for export. Rivets and nuts are also moving off in fair quantities. Plates are being offered at 2.65c. for round lots and small parcels at 2.70c. Reports from Los Angeles say that business there is dull for the present, but considering the activity of the earlier part of the year, a reaction could reasonably be expected. Some orders for third quarter delivery are coming to hand here, but the trade in the southern part of the State is placing orders direct to a considerable extent without reference to this city.

Old Material.—Business shows very little, if any, change from conditions reported two weeks ago. Prices are still quoted at from $12 to $12.50 per ton for the better grades of heavy melting steel and nominal values for the common unsorted material. Consumers are buying very sparingly and even fractional shading of asking figures fails to stimulate buying. Sales to the southern part of the State are insignificant and but little tonnage seems to be moving anywhere.

Receivers for J. L. Mott Works

Receivers have been appointed for the J. L. Mott Iron Works, Trenton, N. J., large manufacturer of plumbers' supplies, upon petition of the Tottenville Copper Co. of Staten Island, New York, which claims that liabilities of the company now due are in excess of $1,700,000 and that many creditors have threatened suits. The Tottenville Copper Co.'s claim is for $48,581, of which $41,381 is said to be overdue.

Victor N. Roadstrum, executive manager of the Mott company, 118 Fifth Avenue, New York, states that action was taken at the instance of the directors to conserve the company's assets and protect its creditors. The company, he says, has quick assets of more than twice its quick liabilities and, in addition, is the owner of a majority of the capital stock of many affiliated corporations operating successfully in jobbing plumbers' supplies, which will not be affected by the receivership of the holding company.

Puddlers' Wage Reduced

Owing to decline in the average price of bar iron shipped during the 60-day period ending June 20, the tonnage rate for puddlers drops during the July-August period from $13.13 per ton to $12.63, while finishers are cut 5 per cent. The average selling price of bar iron, as disclosed last week at the bimonthly examination of sales sheets in Youngstown, was 2.25c. per lb., whereas two months previously it was 2.35c. The settlement was conducted at the offices of James H. Nutt, secretary of the Western Bar Iron Association. M. F. Tighe of Pittsburgh, president of the Amalgamated Association of Iron, Steel and Tin Workers, represented the employees.

Maumee Metal Parts Co. to Expand

In addition to its permanent mold plant the Maumee Metal Parts Co., which has changed its name and address to Toledo Alloyed Castings Co., Hamilton and Division Streets, Toledo, Ohio, has completed plans for the installation of new equipment and the construction of a new building on property which it owns adjacent to the present plant and in which will be housed an experimental and sand casting foundry. An increase in capitalization from $50,000 to $100,000 has been authorized. The company specializes in quantity production of high-grade castings in aluminum, brass and bronze.

The executive and general sales offices of the St. Louis Coke & Iron Co. have been moved from St. Louis to the Continental-Commercial National Bank Building, Chicago. Officers who have changed their headquarters to Chicago include W. G. Maguire, president; P. V. Harper, vice-president; W. H. Underwood, general sales manager, and F. R. Johnson, manager of raw materials. The company will continue to maintain a sales office in St. Louis in charge of Edward Gross, district sales manager.

L. H. G. Bouscaren, identified with the Chicago office of Stone & Webster, Inc., states there is under construction at present the greatest number of electric power stations in the history of the country.

FABRICATED STEEL BUSINESS

Bookings Exceed 31,000 Tons and 22,000 Tons of New Work Appears

Bookings of fabricated steel work were larger in the past week than in any week since the middle of April. They called for 31,500 tons, of which 8600 tons covered public work, 7900 tons business and other privately owned buildings, 5700 tons oil development, 2900 tons institutional buildings and 5800 tons public service work. Fresh inquiries called for 22,000 tons. Awards include:

Reis loft building, Fortieth Street, New York, 1000 tons, to Levering & Garrigues Co.

Knights of Columbus building, Brooklyn, 2600 tons, to Levering & Garrigues Co.

Rutland, Vt., highway bridge, 100 tons, to Phoenix Bridge Co.

Philadelphia, tunnel, 250 tons, to Bethlehem Steel Co.

Building at Providence, R. I., 500 tons of structural shapes and 200 tons of bars, to Turner Construction Co., which will sub-let steel fabrication.

Northumberland County, Pennsylvania, highway bridge, 900 tons, to Bethlehem Steel Co.

Theater, Boston, 500 tons, to American Bridge Co.

Garage, Springfield, Mass., 550 tons, to American Bridge Co.

Power plant, Bridgeport, Conn., 900 tons; general contract awarded to George F. Watts Corporation, which will sub-let steel fabrication.

Lehigh Valley Railroad, bridge, 150 tons, to Bethlehem Steel Co.

Transit Commission of New York, repair shop at Coney Island, New York, 650 tons, to American Bridge Co.

Presto Lunch Co., building in Newark, N. J., 200 tons, to Hedden Iron Construction Co.

Sheffield Farms Co., garage at Flushing, Long Island, 200 tons, to Hinkle Iron Co.

Institutional building at Jennings Avenue and West Farms Road, New York, 300 tons, to Hinkle Iron Co.

City of New York, two public schools, one of 1000 tons and one of 500 tons, to McClintic-Marshall Co.

First National Bank Building, Portsmouth, Ohio, 200 tons, to Massillon Bridge & Structural Co.

Big Four Railroad, bridge work, 230 tons, American Bridge Co. low bidder.

Columbia Power Co., Cincinnati, power plant, 3900 tons, to Fort Pitt Bridge Works.

Hamilton County (Ohio) Commissioners, highway bridge, 400 tons, to E. M. Scully.

Columbus Bolt Works, Columbus, Ohio, new building, 350 tons, to Jones & Laughlin Steel Corporation.

Champion Fibre Co., Canton, N. C., new building, 500 tons, to Converse Bridge Co.

Humble Oil Co., tanks for Texas field, 4000 tons, divided equally between Chicago Bridge & Iron Works and Graver Corporation.

Vacuum Oil Co., oil storage tanks, 1500 tons, to Reeves Brothers Co., Alliance, Ohio.

Schaeffer Oil Co., oil storage tanks, 160 tons, to Kaw Boiler Works, Kansas City, Mo.

First National Bank Building, Hammond, Ind., 700 tons, to Duffin Iron Works.

Gas holder, Miami, Fla., 700 tons, to Chicago Bridge & Iron Works.

Riverside Power Mfg. Co., Davenport, Iowa, power plant at Iowana, Iowa, 647 tons, to Rock Island Bridge & Iron Co.

Wisconsin Valley Electric Co., Wausau, Wis., power station and tainter gates for Alexander dam, Merrill, Wis., 263 tons, to Wausau Iron Works.

Building at Canton, Miss., 100 tons, to St. Louis Structural Steel Co.

Midwest Pipe & Supply Co., St. Louis, warehouse, 400 tons, to Stupp Brothers Bridge & Iron Co.

Fairmount Park, grandstand, East St. Louis, Ill., 175 tons, to Superior Iron Works.

U. S. Engineers' Office, Pittsburgh, 2 dump scows, 225 tons, to American Bridge Co.

Missouri-Illinois Railroad, Bonne Terre, Mo., car float, 350 tons, to American Bridge Co.

Missouri Portland Cement Co., St. Louis, 2 sand barges, 500 tons, to American Bridge Co.

Chazy Marble & Lime Co., Chazy, N. Y., lime plant, 200 tons, to American Bridge Co.

Westinghouse Products Co., Mansfield, Ohio, main building and machine shop, 1150 tons, to McClintic-Marshall Co.

Chesapeake and Delaware Canal bridges, one each at St. George, Del.; Summit, Del., and Chesapeake City, Md., totaling 3000 tons; Phoenix Bridge Co., low bidder, will probably be awarded the contract.

Delaware River bridge, Philadelphia to Camden, 1600 tons of fabricated steel on contract No. 15, awarded by the Keystone State Construction Co., general contractor, to American Bridge Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

City of New York, public schools Nos. 39, 130 and 131, totaling about 3000 tons.

Permanent Industrial Exposition Building, Newark, N. J., about 500 tons.

Kresge 5 and 10-cent store, 345 Central Avenue, Jersey City, N. J., a few hundred tons.

Bloomfield, N. J., telephone building, 200 tons.

Central garage, 180 Washington Street, Newark, N. J., 600 tons.

Norfolk & Western Railroad, building, 200 tons.

New York Central Railroad, bridge, 100 tons.

Botany Worsted Mills, Passaic, N. J., 300 tons.

Office building, Miami, Fla., 800 tons.

Westinghouse Electric & Mfg. Co., Springfield, Mass., 400 tons.

Erie Railroad, bridges, 200 tons.

Chateaugay Ore & Iron Co., coal breaker, 1200 tons.

U. S. Engineers' Office, Louisville, Ky., structural steel and castings for locks Nos. 49 and 50, Ohio River, 200 tons, bids received July 22.

Lumber Exchange Building, Adams and Clinton Streets, Chicago, 2000 tons, bids taken.

Burnham, Stoepel & Co., Detroit, warehouse, 1100 tons, Smith, Hinchman & Grylls, Detroit, architects.

Portland, Ore., bridge, 1500 tons.

Cleveland Electric Illuminating Co., Cleveland, power house, 2500 tons.

New York Central Railroad ore bridge at Ashtabula, 1000 tons.

Hotel Dennis, Atlantic City, N. J., 2000 tons; revised plans, former bids of a few months ago having been rejected.

Penn Athletic Club, Philadelphia, 4300 tons; bids close July 8.

RAILROAD EQUIPMENT BUYING

Locomotive Builder Takes Mexican Car Order—Inquiries More Numerous

Inquiries for passenger equipment and freight car repair parts are more numerous, but there is very little inquiry for freight carrying equipment. Some of the more important items of the week follow:

The Lehigh & New England Railroad has asked for prices on the repair of 300 freight cars.

The New York Central Railroad is in the market for 30 Pacific type locomotives, and from 2 to 30 electric locomotives.

The Seaboard Air Line has an inquiry out for 18 passenger cars of various types and 10 caboose cars.

The South African Railways are inquiring in the United States for 50 narrow-gage steel gondolas.

The Sandy Valley & Elkhorn Railroad has placed an order with the Youngstown Steel Car Co. for the repair of 1000 freight cars.

The Baldwin Locomotive Works, Philadelphia, has received an order from the Mexican Government for 3000 freight cars, involving an expenditure of $8,000,000. Whether the Baldwin works will build the cars in its own shops or sub-let them to a car-building company has not been announced.

The Baldwin Locomotive Works, Philadelphia, has received an order from France for 10 large electric locomotives.

The Magnolia Petroleum Co. has placed 50 10,000-gal. tank cars with the American Car & Foundry Co.

The New York Central has ordered 28 horse cars from the Merchants Dispatch Transportation Co. and is inquiring for 60 35-ton express refrigerator cars.

The Grand Trunk is inquiring for 25 underframes for caboose cars.

The Detroit Edison Co. has ordered 24 55-ton hopper cars from the Pressed Steel Car Co.

Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....2.15c. to 2.20c.

Structural Materials

Beams, channels, etc., base, per lb.....2.15c. to 2.20c.
Sheet piling .....2.30c. to 2.40c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.15c. to 2.25c.
Soft steel bars for cold finishing.....$3 per ton over base
Reinforcing steel bars, base.....2.15c. to 2.25c.
Refined iron bars, base, per lb.....3c.
Double refined iron bars, base, per lb.....4.75c.
Stay bolt iron bars, base, per lb.....6.50c. to 7.00c.

Hot-Rolled Flats

Hoops, base, per lb.....2.75c.
Bands, base, per lb.....2.75c.
Strips, base, per lb.....2.50c. to 2.75c.

Cold-Finished Steel

Bars and shafting, drawn or rolled, base, per lb.....2.90c.
Bars and shafting, drawn or rolled, l.c.l., per lb.2.90c. to 3.00c.
Shafting, turned and polished, base, per lb.....3.00c.
Bars, S. A. E. Series, No. 2100.....4.75c.
Bars, S. A. E. Series, No. 2300.....6.25c.
Bars, S. A. E. Series, No. 3100.....5.25c.
Strips, base, per lb.....4.50c.

Wire Products

(To jobbers in car lots)

Nails, base, per keg.....$2.90
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in..... 2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb.....$2.65
Annealed fence wire, base, per 100 lb..... 2.80
Spring wire, base, per 100 lb..... 3.70
Galvanized wire No. 9, base, per 100 lb..... 3.25
Galvanized barbed, base, per 100 lb..... 3.70
Galvanized staples, base, per keg..... 3.70
Painted barbed wire, base, per 100 lb..... 3.35
Polished staples, base, per keg..... 3.35
Cement coated nails, base, per count keg..... 2.30 to 2.35
Bale ties, carloads to jobbers
75, 5, 5 and 2½ to 75 and 5 per cent off list
Woven fence, carloads (to jobbers).....67½ per cent off list
Woven fence, carloads (to retailers).....65 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads,
60, 20 and 10 per cent off list
Machine bolts, all sizes, cut threads..60 and 20 per cent off list
Carriage bolts, ⅝ x 6 in.:
Smaller and shorter, rolled threads..60 and 20 per cent off list
Carriage bolts, cut threads, all sizes..60 and 20 per cent off list
Lag bolts .....65 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in.,
50, 10 and 10 per cent off list
Larger and longer sizes.....50, 10 and 10 per cent off list
Hot pressed squares or hex. nuts, blank.....5c. off list
Hot pressed nuts, tapped.....5c. off list
C.p.c. and t. square or hex. nuts, blank.....4.50c.
C.p.c. and t. square or hex nuts, tapped.....4.50c
Semi-finished hex. nuts:
⅞ in. and smaller, U. S. S.....80, 10 and 5 per cent off list
⅝ in. and larger, U. S. S.....75, 10 and 5 per cent off list
Small sizes, S. A. E.....80, 10, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger.....75, 10 and 5 per cent off list
Stove bolts in packages.....80, 10 and 5 per cent off list
Stove bolts in bulk.....80, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 5 per cent off list
Bolt ends with cold pressed nuts.....50 and 5 per cent off list
Turnbuckles, with ends, ½ in. and smaller,
55 and 5 per cent off list
Turnbuckles, without ends, ½ in. and smaller,
70 and 10 per cent off list
Washers .....5.75c. to 6.00c.
Lock washers .....80 per cent off list

Semi-Finished Castellated and Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

	Per 1000 S. A. E.	Per 1000 U. S. S.		Per 1000 S. A. E.	Per 1000 U. S. S.
¼-in.	$4.25	$4.25	⅞-in.	$13.25	$13.50
5/16-in.	4.90	4.90	1-in.	16.25	16.50
⅜-in.	5.90	6.25	1⅛-in.	22.50	23.00
7/16-in.	7.50	8.50	1¼-in.	34.00	34.00
½-in.	9.75	10.00	1-in.	53.00	55.00

Larger sizes—Prices on application.

Cap and Set Screws

Milled hex. head cap screws.....75, 10 and 5 per cent off list
Milled standard set screws, case hardened,
75, 10 and 5 per cent off list
Milled headless set screws, cut thread,
75, 10 and 5 per cent off list
Upset hex. head cap screws, U. S. S. thread,
80, 10 and 10 per cent off list
Upset hex. head cap screws, S. A. E. thread,
80, 10 and 10 per cent off list
Milled studs .....65 and 10 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb..$2.60 to $2.65
Small rivets .....70, 10 and 5 per cent off list

Track Equipment

Spikes, ⅝ in. and larger, base, per 100 lb.....$2.90
Spikes, ½ in. and smaller, base, per 100 lb.....$3.25 to 3.40
Spikes, boat and barge, base, per 100 lb..... 3.25 to 3.40
Track bolts, all sizes, base, per 100 lb..... 3.75 to 4.25
Tie plates, per 100 lb..... 2.50 to 2.55
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+19	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1¼	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent on galvanized.

Boiler Tubes

Lap Welded Steel		*Charcoal Iron*	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	55	3 and 3¼ in.	36
1¼ and 1½ in.	47	3½ and 3¾ in.	37
1¾ in.	31	4 in.	41
2 and 2¼ in.	22	4½ in. and 5 in.	33
2½ and 2¾ in.	32		

Hot Rolled

3 and 3¼ in.	38	4 in.	43
3½ in. and 3¾ in.	39		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....87 per cent off list
Carbon 0.30 to 0.40, base.....85 per cent off list
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage	15	2¼-in. O.D. 10 gage	20
2-in. O.D. 11 gage	16	3-in. O.D. 7 gage	35
2-in. O.D. 10 gage	17	1½-in. O.D. 9 gage	15
2¼-in. O.D. 12 gage	17	5¾-in. O.D. 9 gage	55
2¼-in. O.D. 11 gage	18	5½-in. O.D. 9 gage	57

Tin Plate

Standard cokes, per base box.....$5.50

Terne Plate

(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.00	20-lb. coating I. C.	$14.90
8-lb. coating I. C.	11.80	25-lb. coating I. C.	16.20
12-lb. coating I. C.	12.70	30-lb. coating I. C.	17.35
15-lb. coating I. C.	13.95	35-lb. coating I. C.	18.35
		40-lb. coating I. C.	19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....2.75c. to 2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.50c. to 3.65c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb., 5.10c.

Galvanized

No. 28 (base), per lb.....4.60c. to 4.80c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....5.30c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.65c.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.65
Old range non-Bessemer, 51½ per cent iron	4.90
Mesabi Bessemer, 55 per cent iron	5.40
Mesabi non-Bessemer, 51½ per cent iron	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.75c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	45c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	42c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, per unit, in 60 per cent concentrates	$8.75 to $10.00
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	19.00 to 22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$107.50
Ferromanganese, British, 80 per cent f.o.b. Atlantic port, duty paid	107.50
Ferrosilicon, 50 per cent, delivered	$72.00 to 72.50
Ferrosilicon, 75 per cent	140.00
Ferrotungsten, per lb. contained metal	90c. to 93c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	10.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....$35.00
Spiegeleisen, domestic, 16 to 19 per cent..... 34.00
Ferrosilicon, Bessemer, 10 per cent, $39.50; 11 per cent, $42, 12 per cent, $43.50; 14 to 16 per cent (electric furnace), $40.00.
Silvery iron, 5 per cent, $27.00; 6 per cent, $28.00; 7 per cent, $29.00; 8 per cent, $30.50; 9 per cent, $32.50; 10 per cent, $34.50; 11 per cent, $37.00; 12 per cent, $39.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	$20.00 to $22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	22.00 to 23.50

Per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$40.00 to $43.00	$37.00 to $40.00
Maryland	45.00 to 47.00	40.00 to 42.00
Ohio	40.00 to 43.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois		37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Ground fire clay, per net ton		6.00 to 7.00

Silica Brick:	
Pennsylvania	38.00
Chicago	47.00
Birmingham	50.00
Ground silica clay, per net ton	7.50 to 8.00
Magnesite Brick:	
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)	65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)	40.00
Chrome Brick:	
Standard size, per net ton	47.00

Semi-Finished Steel, F.O.B. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$38.00
Rolling billets, 2-in. and under	38.00
Forging billets, ordinary carbons	43.00
Sheet bars, Bessemer	40.00
Sheet bars, open-hearth	40.00
Slabs	38.00
Wire rods, common soft, base, No. 5 to ⅜-in.	$48.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon, 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2.15c. to 2.20c.
Skelp, sheared, per lb.	2.15c. to 2.20c.
Skelp, universal, per lb.	2.15c. to 2.20c.

Finished Iron and Steel, F.O.B. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, lb.	1.90c. to 2.00c.
Rails, light, rail steel, base, per lb.	1.75c. to 1.80c.
Bars, common iron, base, per lb., Chicago mill	2.20c.
Bars, common iron, Pittsburgh mill	2.40c.
Bars, rail steel reinforcing, base, per lb.	2.10c. to 2.15c.
Rail steel bars, base, per lb., Chicago mill	2.10c.
Cold-finished steel bars, base, Chicago, per lb.	2.90c.
Ground shafting, base, per lb.	3.30c.
Cut nails, base, per keg	$3.00

Alloy Steel

S. A. E. Series Numbers	Bars 100 lb.
2100*(¼% Nickel, 10 to 20 per cent Carbon)	$3.50
2300 (3½% Nickel)	5.00
2500 (5% Nickel)	$6.50 to 7.00
3100 (Nickel Chromium)	4.00
3200 (Nickel Chromium)	5.75
3300 (Nickel Chromium)	8.00
3400 (Nickel Chromium)	7.00 to 7.25
5100 (Chromium Steel)	3.75
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.75
6100 (Chromium Vanadium spring steel)	4.50 to 4.75
9250 (Silicon Manganese spring steel)	3.75 to 4.00
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.75
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.50
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	4.25
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb., f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are $10 per gross ton less than net ton prices for bars of same analysis. On smaller than 4 x 4-in. billets the net ton bar price applies.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

High Speed Twist Drills

F.o.b. factory

Taper shank 1½ in. diameter and smaller...50 per cent off list
Taper shank larger than 1½ in. diameter...45 per cent off list
Wire and jobber sizes.....50 and 10 per cent off list

Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, carload lots, 36,000 lb. minimum carload, per 100 lb.:

Philadelphia, domestic	$0.32	Buffalo	$0.265	St. Louis	$0.43	*Pacific Coast	$1.15
Philadelphia, export	0.235	Cleveland	0.215	Kansas City	0.735	*Pac. Coast, ship plates	1.20
Baltimore, domestic	0.31	Cleveland, Youngstown Comb.	0.19	Kansas City (pipe)	0.705	Birmingham	0.53
Baltimore, export	0.225	Detroit	0.29	St. Paul	0.60	Memphis	0.56
New York, domestic	0.34	Cincinnati	0.29	Omaha	0.735	Jacksonville, all rail	0.70
New York, export	0.255	Indianapolis	0.31	Omaha	0.705	Jacksonville, rail and water	0.415
Boston, domestic	0.365	Chicago	0.34	*Denver	1.15	New Orleans	0.67
Boston, export	0.255			†Denver (pipe)	1.17		

*Applies minimum carload 80,000 lb. †Minimum loading 46,000 lb.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingots and muck bars, structural steel, common wire products, including cut or wire nails, spikes, and wire hoops, 40c.; sheets and tin plates, 40c.; sheets No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All rates per 100 lb. in carload lots, minimum 36,000 lb.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
June	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
25.....	12.62½	12.12½	43.50	7.00	6.80	6.15	5.80
26.....	12.62½	12.12½	43.75	7.00	6.80	6.10	5.75
27.....	12.62½	12.25	44.00	7.00	6.80	6.10	5.75
28.....	12.62½	12.25	....	7.00	6.80	6.10	5.75
30.....	12.62½	12.25	44.00	7.00	6.75	6.15	5.80
July							
1.....	12.62½	12.25	45.00	7.00	6.70	6.15	5.80

*Refinery quotation: delivered price ¼c. higher.

New York

New York, July 1.

The depression in the markets continues and there is very little buying of any of the metals. The copper market is practically stationary but prices of tin have advanced slightly. The lead market is somewhat easier and buying is falling off. The zinc market is quiet but fairly firm.

Copper.—Prices of electrolytic copper, after declining slightly during the week, have again become firmer at 12.50c., delivered, but the volume of business is by no means satisfactory. Reports of fairly large sales in the last two or three days are contradicted. The only large inquiry noted is one for 2,000,000 lb. for a wire company. There has been some foreign buying, with a little better demand from Germany, but the combined foreign and domestic demand is not sufficient to lift the market out of its sluggishness. The fact that production is still larger than consumption is a weakening factor. The fluctuating prices in London continue to affect quotations here and the market in general continues to be a waiting one. Lake copper continues nominal at 12.50c. to 12.75c., delivered.

Copper Averages.—The average price of Lake copper for the month of June, based on daily prices in THE IRON AGE, was 12.75½c., delivered. The average price of electrolytic copper was 12.35c., refinery, or 12.60c., delivered.

Tin.—The feature of the market the past week has been the scant offerings of metal from any source, here or in London, the result being that any demand which has appeared has more than taken care of the offerings made, so that the price has shot up in each case. For example, yesterday, late in the day, 150 tons changed hands at 44c. for spot and 44.25c. for futures, with the possibility of sales being made at 44.75c. at the close, had there been any offerings. The week as a whole has been a dull one, with neither buyers nor sellers interested in the market. Late on June 25 the market was moderately active with total sales of 250 tons, the price range being 43c. to 43.62½c. The monthly statistics for June show total stocks on hand at the end of the month amounting to 3507 tons which, with the 560 tons landing on that day, brings the total stocks to 4067 tons. These stocks combined with the 5782 tons reported afloat are regarded as sufficient for a two months' supply under present operating conditions. While the monthly statistics of the New York Metal Exchange show 4310 tons delivered into consumption, it is believed that some of this is still held as stocks which are not reported in the usual way. The market today has been a quiet one, firm but dull, with spot Straits tin quoted at 45.00c., New York. The London market today is about £6 per ton higher than a week ago with spot standard quoted at £228 10s., future standard at £229 2s. 6d., and spot Straits at £231.

Lead.—Demand has fallen off considerably and the market is generally quiet but fairly firm. The New York price of both the leading interest and the independents is now the same at 7c., with the quotation at St. Louis a little lower than a week ago at 6.70c.

Zinc.—There is very little change in the market for prime Western zinc. There has been a little more foreign buying than for some time, but domestic purchases have been insignificant. Prices have changed but little, with the quotation today standing at 5.80c., St. Louis, or 6.15c., New York.

Nickel.—Shot and ingot nickel are quoted unchanged at 27c. to 32c. per lb., with electrolytic nickel held at 30c. to 32c. by the leading producers. In the outside market shot and ingot nickel are quoted at 28c. to 32c. per lb.

Antimony.—Wholesale lots of Chinese metal for spot and July delivery are quoted at 8.35c. to 8.40c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 26.50c. to 27c. per lb., duty paid, delivered.

Old Metals.—Inquiry is better and values are firmer. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible	12.00
Copper, heavy and wire	11.00
Copper, light and bottoms	10.00
Heavy machine composition	9.50
Brass, heavy	7.75
Brass, light	6.25
No. 1 red brass or composition turnings	8.50
No. 1 yellow rod brass turnings	7.25
Lead, heavy	6.50
Lead, tea	5.25
Zinc	4.25
Cast aluminum	16.00
Sheet aluminum	16.50

Chicago

JULY 1.—Tin has advanced and lead is slightly lower, while the other metals are unchanged. The market is generally quiet but lead, notwithstanding a slight decline, is showing more strength than was generally expected. Tin is stiffer owing to foreign speculation, but the local trade doubts whether present prices will hold. Among the old metals red brass is higher, while certain copper grades, lead and tin foil are lower. We quote in carload lots: Lake copper, 13c.; tin, 45c.; lead, 6.90c.; spelter, 5.75c.; antimony, 10.50c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 9.75c.; copper bottoms, 8.50c.; red brass, 7.75c.; yellow brass, 6.50c.; lead pipe, 5.50c.; zinc, 3.75c.; pewter, No. 1, 21c.; tin foil, 25c.; block tin, 31c.; all buying prices for less than carload lots.

Sheet Business Declined Rather Sharply in May

Sheet statistics for May as compiled by the National Association of Sheet and Tin Plate Manufacturers showed substantial shrinkages in all directions as compared with the previous month, and even greater losses as compared with May last year. Sales for May were down 56,000 tons from those of April and 116,000 tons as compared with May last year; production was 58,000 tons less than in April and 84,000 tons less than in May last year; shipments decreased in May 39,000 tons as compared with the previous month and 82,000 tons as compared with the same month last year, while unfilled orders at the end of May were 68,000 tons less than on April 30 and 257,000 tons under the total of May 31, last year. The figures in net tons make the following comparison:

	1924 May,	1924 April,	1923 May,
Capacity	419,000	413,000	420,000
Per cent reporting	70.7	71.7	70.0
Sales	126,487	182,903	242,624
Production	176,582	234,000	260,006
Shipments	196,254	235,967	278,059
Unfilled orders	294,774	362,457	551,139
Unshipped stocks	89,548	92,629	118,384
Unsold stocks	43,319	48,945	23,397

The first unit of the Gary Tube Co., Gary, Ind., now in the course of construction, is expected to go into operation the latter part of September or the first of October. This section of the plant, comprising the pipe mills, will cost $20,000,000. Work has been started on the second unit, consisting of skelp mills, which will cover approximately 30 acres between the tube mills and the harbor.

PERSONAL

Fred W. Bauer and James C. Mears have been appointed resident managers of the Chicago office of Rogers, Brown & Co. Mr. Bauer goes to Chicago from Springfield, Ohio, which has been his headquarters in following Detroit and northwestern Ohio trade. His first business affiliation was with the Warder, Bushnell & Glessner Co., Springfield, with which he was associated for three years as chemist and metallurgist for

F. W. BAUER

J. C. MEARS

its malleable and gray iron foundries. Following the merger of that company with the International Harvester Co., Mr. Bauer became identified with the Star Furnace Co., Jackson, Ohio, as blast furnace chemist. In 1901 and 1902, he was on the sales force of the American Steel Hoop Co., Cincinnati. In 1903, following the merger of that company with the Carnegie Steel Co., he joined the sales organization of Rogers, Brown & Co. at Cincinnati. For two years he traveled from the St. Louis office and in 1907 he took over the territory which he now leaves. Mr. Mears was formerly manager of the St. Louis office of Rogers, Brown & Co. He started his business career in 1888, when he associated himself with the Cincinnati office of that company, and since then has been uninterruptedly identified with the organization. In January, 1891, he was transferred to St. Louis as traveling representative and in May, 1893, was made manager of that office. Mr. Bauer's former territory has been divided between J. R. Morehead and John A. Plimpton, who will travel from the Cincinnati office. Mr. Morehead has been with the company for several years, starting with the Pittsburgh office, later going to Cleveland, and at present being assistant to the sales manager at Cincinnati. Mr. Plimpton was graduated from the Massachusetts Institute of Technology in the class of 1921. He has had considerable foundry experience and has done special work in the heat treatment of cast iron. He joined Rogers, Brown & Co. in October, 1923.

Gilbert Calyer Tompkins, president Research Engineering Corporation, New York, sailed for Europe June 24, on the President Harding. He will stay at the Hotel Metropole, London, where he will confer during the world power convention with engineering and industrial interests regarding the company's affairs.

John C. Shillito, formerly assistant superintendent of the Beaver Falls, Pa., plants of the Union Drawn Steel Co., Beaver Falls, has been appointed general superintendent, succeeding the late Frank B. Maloney. He will make his headquarters at Beaver Falls, and will have charge of the company's three plants, two at Beaver Falls and one at Gary, Ind. He has been identified with the Union Drawn Steel Co. for 30 years, having started as an operator on a cutting machine.

J. L. Lockhead has resigned as general superintendent of the Pittsburgh works, Jones & Laughlin Steel Corporation. His successor is Charles Elliott, formerly of the Weirton Steel Co., Weirton, W. Va.

A. G. Montgomery, master mechanic at the Shoenberger works, American Steel & Wire Co., Pittsburgh, has been transferred to the Central Furnaces plant at Cleveland.

R. W. Ellingham, formerly with the Van Norman Machine Tool Co., Springfield, Mass., has been made works manager of the Keating Valve Co., that city.

John Oster has resigned as secretary-treasurer and general manager of the Andis O. M. Mfg. Co., Racine, Wis., manufacturer of motor-driven hair clippers, blades and other automatic cutlery. He has been associated with the company since 1918 and now plans to engage in business on his own account in Racine.

Bertram E. Puerner, designing engineer of the cement works department, Allis-Chalmers Mfg. Co., Milwaukee, started June 27 for Shanghai, China, to assume new duties as sales engineer. During the past year he has been engaged in the construction and equipment of a large cement plant in California.

Warren J. Davis has resigned as president of the J. I. Case Threshing Machine Co., Racine, Wis., to assume the office of chairman of the board. Leon R. Clauson, for 12 years vice-president of Deere & Co., Moline, Ill., has been elected president. The changes take effect Aug. 18. Charles Deere Wiman, grandson of the founder of Deere & Co., will succeed Mr. Clauson at Moline.

A. C. Brown, president Brown Hoisting Machinery Co., has been elected vice-president of the Cleveland Engineering Society for the ensuing year. The new president is J. H. Alexander, vice-president Cleveland Railway Co.

L. H. Mesker, recently associated with the Clark-Mesker Co., Cleveland, and for many years affiliated with the machine tool business in the Central West, has become connected with the Cleveland Planer Co., Cleveland.

Roger H. Sproat, formerly connected with the office of the vice-president and general superintendent of the American Steel & Wire Co. in Pittsburgh, and later in the office of the manager of the wire mills and Newburg Wire Works in Cleveland, has been appointed assistant superintendent of the Newburg Wire Works, effective July 1, succeeding James Mathews, who has been transferred to the general manager's staff.

W. J. Filbert, controller of the United States Steel Corporation, sailed from New York this week on a trip of two months in Europe.

William P. Palmer, president American Steel & Wire Co., is spending a fortnight at the Megantic Club in the Maine wilderness. With him are his son, William P. Palmer, Jr.; District Manager Jay Waldeck of the Cleveland district, American Steel & Wire Co.; B. H. Lawrence, Pittsburgh, mechanical engineer; District Manager Clinton S. Marshall of the Worcester district, and E. H. Lawrence, superintendent of the New Haven, Conn., plant.

Dr. Leo H. Baekeland, president American Chemical Society and honorary professor of chemical engineering in Columbia University, has been made commander of the Order of Leopold by King Albert of Belgium. Among former distinctions conferred upon Dr. Baekeland, who is also president of the General Bakelite Co., are the crosses of an officer of the Legion of Honor of France and of an officer of the Order of the Crown of Belgium.

R. S. Dutton, secretary and sales manager Pickands, Brown & Co., Chicago, has returned from a six-weeks trip abroad, where he visited England, Holland, Belgium and France.

Fred D. Sweet, Chicago, has acquired an interest in the Steel Products Corporation, Sheboygan, Wis., and has been elected secretary as well as sales manager. He formerly was associated with the Biflex Corporation, Waukegan, Ill., and later with the H. L. Rackliffe Co., Cleveland.

New 27-In. Engine Lathe

(*Concluded from page* 10)

out instantly. One lever operates both the cross and longitudinal feeds.

A feature of the drive is that none of the gears are overhung. They are inclosed in an oil tight head, and all gears and bearings are flooded with oil, pumped from the filter tank. The first driving pinion is mounted on its own shaft with bearings on both sides so that the motor bearings only carry the armature load. Minimizing the rapid wearing of the motor bearings is emphasized as a necessary feature because if the clearance between the armature and pole pieces is not inspected regularly, a worn bearing may let the armature down on the pole pieces and strip the armature.

A push button arrangement to aid in shifting gears on the motor-driven lathes is a feature, a "jog" button control having been developed, so that when the button is pressed the gears turn over very slowly and may be shifted easily. The gears turn over only at a fraction of their normal speed when the "jog" button is employed. The alternating-current motor is direct-connected to the machine, the friction clutch having been eliminated by the "jog" button described. A reversing controller operative from the carriage is available as an extra. The construction of the a.c. and d.c. headstock is similar except that 12 speed changes are available instead of four speed changes on the d.c. drive.

On the single-pulley drive, the pulley is mounted between taper roller bearings which are adjustable for wear. A multiple disk clutch of the automobile type is employed. The disks are engaged by springs so that the pressure between the disks is not reduced as they wear. A large number of steel disks are used and alternate disks are faced with brake lining. Because of the number and size of the disks, the friction area is unusually large and the pressure between disks is kept low and wear reduced to the minimum. The clutch is operated by a handle on the carriage or from a lever below the head, which may be used when shifting gears. When the clutch is released a brake is applied automatically. The clutch is operated through a ball thrust bearing. Twelve speeds are obtainable by shifting gears.

The standard taper attachment is arranged to travel with the carriage, so that it is always ready for use. The cross-slide is connected to the carriage for straight turning and to the sliding block when turning tapers. The same bolt being used in each case so that the taper attachment cannot be connected while the cross-slide is locked. The change from straight to taper turning is made by removing this bolt from one place and putting it in another, this being done from the front of the machine.

The long block which slides in the taper bar has large bearing surfaces, is fitted with a taper gib and is designed to receive and deliver pressure at the same height, which is emphasized as preventing any rocking and resulting in smooth and closely accurate work. The bolts which lock the taper bar can be reached from the front. The taper attachment does not cut down the swing over the bridge. The cross feed screw and the taper attachment may be used at the same time.

The quick change gear mechanism is a self-contained unit, and may be exposed by removing the top cover. A direct-reading feed plate permits of selecting a desired feed immediately by placing the tumbler in the proper hole. Gears and bearings are continuously flooded with oil furnished by the oil pump through the headstock. Oil from the feed box overflows and drains into a tank in the bed, where it is filtered and again pumped back into the bearings. The cover of the feed box projects beyond the narrow tumbler slot, which is intended to protect the gears from dirt.

A coolant attachment is available, the pump unit of which is driven from the rapid traverse gear box. The coolant is pumped through a flexible steel hose connected to the lathe carriage and after flowing over the tool it drains through the holes in the back of the bed to a steel pan. From the pan it drains to the head end leg of the lathe which forms a settling tank. This tank is divided into two compartments, one of which acts as a settling chamber, the coolant from this overflowing into the second compartment from which the pump delivers it to the tool. Sediment may be cleaned out conveniently from the door shown in the rear view illustration.

RATE CASE ARGUED

Jones & Laughlin Steel Corporation Petition Heard by Commerce Commission

WASHINGTON, July 1.—Arguments were made last Friday before a division of the Interstate Commerce Commission on the tentative report of Attorney Examiner William A. Disque in the so-called Jones & Laughlin Steel Corporation case, recommending that rates on iron and steel products from the Pittsburgh district to St. Louis and points in Illinois and Indiana be established on a basis of 80 per cent of the fifth class rates or the equivalent of the sixth class rates.

Appearing for intervening steel manufacturers in the Chicago and related territories, together with associations and others interested, Attorney E. S. Ballard took exception to the report. He declared that the broad recommendations of the examiner regarding the revision and increases of the Illinois rates went beyond the record and determined issues without notice to the interveners.

Representing the defendant railroads, D. P. Connell contended that if the commission found that the rates constituted undue prejudice against the Pittsburgh district, the railroads should not be required to reduce the rates from Pittsburgh, but ought to be allowed to remove the prejudice in whatever way they chose.

Approving the tentative report in so far as it gives a percentage of the existing fifth class rate to Youngstown and Steubenville (Ohio) and other nearby steel producing points, Attorney H. D. Rhodehouse of the Youngstown Chamber of Commerce maintained that the Youngstown differential under Pittsburgh west ought to be the same as over Pittsburgh east.

The principal argument in favor of the examiner's report was made by Attorney W. W. Collin, who represented the complainants. He asked that the commission issue an order adopting the report, declaring that the examiner had proceeded in the belief that the interested parties would "approach the situation broadly in a spirit of mutual helpfulness." Mr. Collin said that the Jones & Laughlin Steel Corporation had been willing to do this, but maintained that it was evident from exceptions to the report made by interveners and the railroads that it was the purpose of these two groups "to resist by every means the carrying out of the program suggested by the examiner."

Gates for the Wilson Dam

BIRMINGHAM, ALA., June 30.—Fifty-eight gates for the big Wilson Dam on the Tennessee River of the Muscle Shoals development have been ordered off the Hardie-Tynes Mfg. Co., Birmingham, by the War Department. These gates will be among the last machinery to be placed on the dam. Delivery will begin on these gates within 90 days. Upwards of 1,500,000 lb. of iron and steel castings will be in the job. The Hardie-Tynes plant here announces improved conditions in its business, having just shipped an 800-hp. Corliss engine and having others to build. This industry has been in existence here for 27 years and was the first to produce Corliss engines in the South with pig iron made in Birmingham.

The semi-annual meeting of the American Gear Manufacturers Association will be held at Briarcliff Lodge, Briarcliff Manor, New York, Oct. 16, 17 and 18.

American Society for Testing Material

(*Continued from page* 15)

poor results in performance tests. Distinguishing between quenching and drawing temperatures was reported as possible in most cases and it was also stated that the alternating tests were preferable for several reasons, speed being one advantage. The work, however, has not progressed far enough to make definite conclusions covering the entire field.

Fatigue of Metals

Valuable contributions to the problem of the endurance test of metals were made to the latter part of this session's program by several authorities, some of them rather recent investigators in this field. Three papers were presented, the first one entitled "Notes on Some Endurance Tests of Metals," by Dr. H. W. Gillett, director division of metallurgy, Bureau of Standards, Washington, and E. L. Mack. The paper, which is a voluminous one of over 70 pages, was presented by Dr. Gillett, who outlined the chief points. The results of over three years' work in the endurance testing of alloy steels and some non-ferrous metals by the Bureau of Mines form the basis of the paper.

In the investigation static and impact tests with both single and repeated applications of stress were applied to the various steels and metals. Data covering the endurance tests at 140 different heat treatments or conditions, of as many as 45 steels and 10 lots of brass and copper are given in detail. The injurious effect of inclusions in the steels is emphasized and there is also pointed out the effect of various factors upon the endurance strength of metals.

The paper offers a summary of 20 different points and the authors make the general inclusive statement that the material which will withstand the highest stress in repeated loading appears to be a heat-treated alloy steel drawn for a very long time at as high a temperature as is compatible with retention of high strength in order to release internal stress. The steel should be clean or free from inclusions and its surface should be free from scratches or tool marks crossing the line of applied stress. The piece should be made with generous fillets at changes of section. All these requirements look toward avoidance of local excess stress.

Accelerated Fatigue and Endurance of Steel

Two phases in this field were discussed by Dr. D. J. McAdam, Jr., in a paper entitled "Accelerated Fatigue Tests and Notes on the Endurance Range of Steel." Dr. McAdam has conducted extensive investigations in this field at his laboratory at the United States Engineering Experiment Station, Annapolis, Md., and this paper is a part report of a continuation of this important work, former portions of which were presented a year ago (THE IRON AGE, July 5, 1923). It was presented by the author largely by means of lantern slides.

The paper describes a method by which the fatigue failure of specimens is gradually accelerated in an actual breakdown test. Results of endurance tests on steels and non-ferrous metals made by the accelerated method and the slower methods are presented. An investigation of the torsion range of steel is also reported on briefly in the paper, particular reference being made to the position of torsion endurance range within the elastic range.

Repeated Static and Impact Stresses

Only a printed summary of the paper, "Resistance of Metals to Repeated Static and Impact Stresses," by R. R. Moore, chief, physical testing branch, engineering division, U. S. Air Service, McCook Field, Dayton, Ohio, was available, but Mr. Moore presented an abstract with the aid of lantern slides. The paper gives results of tests in his laboratory to determine the limits of some ferrous and non-ferrous metals, the effect of a notch and of cold working on these endurance limits, and the resistance of these metals to impact stresses. A comparison of endurance limits with other physical properties is made. The metals tested include extruded magnesium-aluminum and magnesium-copper alloys, extruded and cast aluminum bronze, cast manganese bronze, plain carbon steel, vanadium steel and stainless iron. Evidence is given in the paper to show that it is possible to raise the endurance limit of some non-ferrous metals by gradually increasing the stress as the test progresses.

Discussion

Prof. H. F. Moore, University of Illinois, Urbana, Ill., who has contributed so much valuable information to this subject in general, discussed briefly the three papers commenting on the comparative value of accelerated and long-time fatigue tests. The coating test, discussed by Dr. Gillett in his paper, was regarded as satisfactory for many purposes by Professor Moore. The speaker stated that in his own experience results of the rise-of-temperature test and the running-deflection tests seem to indicate not a failure of the metal itself but a slip in the crystalline grains. Accelerated tests in general, he emphasized, should be used with great caution. His own results and those of his co-workers, as attained by long-time tests, were stated to check some of the results of Dr. McAdam, particularly on copper and Muntz metal.

A year ago R. L. Templin, Aluminum Co. of America, New Kensington, Pa., outlined some of the results of fatigue tests on certain aluminum alloys. (THE IRON AGE, July 5, 1923.) This year, in the discussion, Mr. Templin announced that some of the tests which were still running had gone through repetitions of stress ranging between one billion and a quarter and one billion and a half without fracture. The discussion was also participated in by J. M. Lessells, East Pittsburgh, who took exceptions to some of the conclusions of the authors of the three papers, giving some of the results of his more recent work.

Sessions on Steel and Non-Ferrous Metals

THE usual sessions on steel and non-ferrous metals differed very little from former ones, being made up of the routine reports of committees with the addition of some original papers. As noted below there were one or two animated discussions. Committee reports were adopted in the usual formal way with very little discussion, the various committee meetings during the week accomplishing the actual work of ironing out the contested points.

Session on Steel

One of the most lively sessions was the one on steel, Thursday morning, June 26. A contest on the floor of the general meeting developed during the presentation of committee A-1's report on steel, the question involved having to do with the overweight on steel plates for railroad or other bridges. The committee had proposed for inclusion in the standard specifications for structural nickel steel, structural steel for bridges and structural steel for buildings a note for modification of the table on tolerances:

> The weight of individual plates ordered to thickness shall not exceed the nominal weight by more than one and one-third times the amount given in this table.

On the one side were ranged many of the railroad men, led by J. R. Onderdonk of the Baltimore & Ohio, with A. W. Carpenter of the New York Central and some steel producers and others on the other side. The aim of the committee had been to harmonize the society's specifications with those of the American Railway Engineering Association, at the latter's request. After considerable discussion, the necessary nine-tenths vote of those present was unavailable to refer the recommendation to letter ballot on the structural steel for bridges. This also applied to the other two items, the matter being referred back automatically to the

committee. The opponents did not see any reason for placing themselves in a position where they could be forced to take heavier plates, while the advocates insisted that it was a small excess in any case on individual plates and that the cooperation of the society with other societies was of vital importance.

Report of the Steel Committee

The most important work of the committee A-1 on steel during the past year was the formulation of specifications for high-speed tool steel and also the formulation of methods of sampling finished steel material for check analysis. Revisions in existing specifications, which are recommended in the report, include structural steels, steels for electric steam railroad service, castings, tubes and pipe, boiler steel, commercial bar steel, carbon tool steel and methods for chemical analysis. The committee reported progress on specifications for sheet steel and announced the formation of a new sub-committee on pipe flanges and fittings. The committee states that cooperative work with the boiler code committee of the American Society of Mechanical Engineers has resulted in the use of the testing society's standards for materials specified in the boiler code. The present membership of this important committee is 165, of which 87 are recognized as non-producers and 78 as producers of steel.

The usual adoption in open meeting of the various recommendations of the committee was voted, with the exception of the matter reported on above.

Phosphorus and Sulphur in Steel

For over three years the society has discussed at its annual meeting the reports of the joint committee on the investigation of phosphorus and sulphur in steel. The first preliminary report was entitled the "Effect of Sulphur on Rivet Steel" and was presented at the annual meeting in 1922. (THE IRON AGE, July 6, 1922). It described and gave results of various physical tests on bars and slabs from 14 heats of rivet steel. Last year the subject was continued but no report was preprinted at the time. A set of tables in the form of blue prints was available for inspection at that meeting which showed the progress of the investigation and which dealt with the sulphur in three heats of basic open-hearth steel typifying plate, forging and rail steels. This was briefly discussed in the annual report of the 1923 meeting in THE IRON AGE, July 5, 1923.

One section of the report this year is designated as the third preliminary report of the committee and covers an investigation of the effect of sulphur on six heats of basic open-hearth carbon steel, 0.20 per cent carbon, with residual sulphur content ranging from 0.03 per cent to 0.08 per cent for structural purposes. The material was rolled into shear and universal plates from which specimens were taken for the standard tension, impact, bend, shear, torsion and hardness tests. There is also contained a report of tests on material as received, annealed and normalized. This was not printed.

The committee also presents this year reports of further tests of the rivet steel first reported on in 1922; the results of alternating tension and compression and alternating torsion endurance tests on the 14 heats of residual sulphur steel in that series are given. Also an extensive metallographic investigation of this material is reported, including the study of the microstructure by means of sulphur prints, an investigation of the non-metallic inclusions, and a study of the microstructure as affected by the various heat treatments. Decided differences between steels of various sulphur content, which had received the same treatment, led to an investigation of the microstructure at high magnifications of 1000 to 4000 diameters, the results of which are reported. The printed report covers 75 pages besides voluminous photomicrographs. A study of the original of this remarkably extensive investigation is recommended in order to get the facts and conclusions. Dr. Burgess, chairman of the committee, and Dr. McAdam presented the reports.

The importance of this "monumental work" was emphasized in an interesting oral discussion by E. E. Thum, Linde Air Products Co., New York, who among other things stressed the point as to whether, in all these tests, the effect of the presence of other metals was not being tested, besides the sulphur and phosphorus.

Publicity for the A. S. T. M.

An interesting running discussion followed the presentation of a paper by T. H. Wiggin, consulting engineer, New York, on "How Shall the Benefits of A. S. T. M. Standardization Be Secured to the Small User?" The author brought out the disadvantages under which the buyer of small quantities labors and gave instances where much damage resulted in the use of poor material. He reported a wide ignorance of the specifications and the work of the society and advocated more publicity. A number of members seconded his suggestions and offered others.

Manganese Steel

Standard or 12-per cent manganese steel was the basis of a paper by John H. Hall and G. R. Hanks, metallurgical engineer and superintendent respectively Taylor-Wharton Iron & Steel Co., High Bridge, N. J., entitled "Composition and Physical Properties of Cast 12-Per Cent Manganese Steel." The authors give the average composition of manganese steel, with brief comments on the proper elements for the different metalloids, together with a summary of steel-making methods employed in foundries making this grade of steel. There is also included a summary of the heat treatment and metallography, together with the physical properties including the tension and bending tests, shear, hardness, resistance to wear, fatigue resistance, coefficient of expansion, heat and electrical conductivity and magnetic properties.

High Tensile Low-Carbon Steels

An interesting paper giving the results of a number of tests on steels under 0.15 per cent carbon resulting in high tensile strength was entitled "High Tensile Strengths of Low-Carbon Steels." The author, R. H. Smith, presented an abstract, the paper not being available in print. He demonstrated that the properties of such steels are greatly affected by heat treatment. It is shown that it is possible to secure 90,000 lb. per sq. in. and higher from such compositions without objectionable brittleness, one treatment involving the use of large quantities of plain hydrant water.

Ferroalloys

Another committee report, that of Committee A-9 on ferroalloys, which was organized only last November, submitted a progress report on the work planned along the lines of methods of sampling and chemical analysis of such alloys as well as specifications for them. F. C. Langenberg, Watertown, Mass., is the chairman.

Heat Treatment

Committee A-4 on heat treatment of iron and steel, Prof. H. M. Boylston, Case School of Applied Science, chairman, recommended the advance to standard of the revised recommended practice for heat treatment of carbon steel castings; announced the appointment of new sub-committees on heat treatment of gray cast iron and of malleable cast iron, as well as a recommendation of the adoption of slight changes in the recommended practice for annealing of miscellaneous rolled and forged steel objects. The proposed definitions of heat treatment terms, formulated by a committee of the American Society for Steel Treating, has been referred to committee A-4 and sub-committee 6 has been requested to review them and report to the main committee. In the absence of the chairman, the report was submitted by the secretary, J. H. Hall.

Non-Ferrous Metals and Corrosion

Committee reports constituted the main portion of the fifth session of the week, devoted to non-ferrous metals, corrosion and metallography, held Wednesday morning, June 25.

The feature was some lively discussion on accelerated corrosion tests and the present situation in the galvanized sheet industry. This followed the presenta-

tion of the committee's report on corrosion of non-ferrous metals and alloys and the presentation of one of the original papers on the program.

Committee B-3 on corrosion of non-ferrous metals and alloys, E. C. Lathrop, chairman, in its report outlined methods which are to be used for total immersion, alternate immersion, spray and accelerated electrolytic corrosion tests of nickel, zinc, lead, copper, aluminum and admiralty metal. The materials and steels to be used are described. The report is based upon a general questionnaire which the committee sent out to the various parties interested.

The paper, "Types of Apparatus Used in Testing the Corrodibility of Metals," by H. S. Rawdon, A. I. Krynitsky of the Bureau of Standards and W. H. Finkeldey of the research laboratory of the New Jersey Zinc Co., Palmerton, Pa., was presented by Mr. Rawdon. It is well illustrated and gives a detailed description of the various types of apparatus used for simple immersion tests; repeated immersion tests; interrupted repeated immersion tests, in which the specimen is permitted to dry between two successive immersions; tests in which the specimen is exposed to mists of the corrosion medium, and tests consisting of a combination of a series of exposures, the entire cycle simulating ordinary weather conditions.

The authors state that information is not available which will permit definite conclusions as to which is the best "all around" method if, indeed, the corrodibility of a metal under any and all kinds of service conditions can be measured by one single test.

The discussion which followed centered around the value of accelerated corrosion tests. Dr. Allerton S. Cushman, Washington, emphasized the danger of accepting, as conclusive, results from such tests and felt that only long-time tests could be used as a basis for constructive action, though he did not underestimate the information available from the shorter tests. A deprecation of the destructive criticism, often indulged in at some of the society's meetings, was voiced by F. G. Breyer, research department, New Jersey Zinc Co., who claimed there was much value in the accelerated tests in galvanized material which were being conducted in the special apparatus at that plant. He urged more tests of this nature, so as to reach more quickly some basis on which to work.

The question of less zinc on some of the galvanized sheets of today was brought up by a maker of refrigerators who said his product was not lasting so long as formerly, due to the presence of only about 1.5 oz. of zinc per sq. ft. instead of about 2.5 oz. Similar complaints were voiced, one solution of which was called attention to by Dr. Cushman—the ease of quickly determining the amount of coating present when the material is bought.

Accelerated Corrosion

A paper on the accelerated corrosion test was contributed by R. J. Anderson and G. M. Enos under the title, "Accelerated Electrolytic Corrosion Test," which offers the results of experiments carried out in the development of an accelerated electrolytic corrosion test in which 42 metals and alloys were subjected to this test. Specimens of these same metals and alloys had been exposed previously to a long-time immersion test in acid mine water, thus affording an opportunity for correlating the two types of tests.

In the non-ferrous realm also was the report of Committee B-2 on non-ferrous metals and alloys. The chairman, Prof. William Campbell, Columbia University, presented this in abstract. The report included a study of the effects of impurities in Babbitt metals and also a statement on the status of commercial lead pipe specifications. The committee also submitted specifications for Muntz metal condenser tubes, for brass condenser tubes, manganese bronze castings, phosphor tin, phosphor copper and silicon copper. Revisions in specifications for admiralty condenser tubes and for Lake and electrolytic copper were recommended.

Corrosion of Iron and Steel

The report of committee A-5 on corrosion of iron and steel, J. H. Gibboney, chairman, consisted largely of reports of its sub-committees, all of which have been active during the year. Among these was a report on the inspection of uncoated sheets exposed to atmospheric corrosion at Annapolis, Md., and Fort Sheridan, Ill., and also one on total immersion tests covering failures of light gage sheets immersed in city water at Washington and in salt water at Annapolis. There were also submitted by the committee specifications for hot-dipped galvanized sheets. A program was offered for the investigation of a number of accelerated tests and of exposure tests of metallic coated products, coated by various commercial processes.

An interesting item in the report was to the effect that, at the invitation of the American Engineering Standards Committee, members of committee A-5 represented the society at a conference held in January to consider the question of nationally uniform specifications for various classes of zinc-coated materials. This conference, attended by a large number of interested organizations, resolved to undertake the preparation of specifications for the adequate protective coating of different classes of zinc-coated product. A sectional committee including all interests was organized because of the general feeling that the scope of the work was so large that best results could be accomplished by such a committee.

Metallography

An interesting part of the report of committee E-4 on metallography, W. H. Bassett, chairman, was the submission of a critical bibliography of methods of etching. The committee's report recommended, for advancement to standard, methods for metallographic testing of iron and steel and of non-ferrous metals and alloys, also recommended practice for photography as applied to metallography as well as revised definitions of terms relating to metallography.

Miscellaneous Matters

At some of the other sessions not covered in the foregoing reports were the following topics covered by reports of some of the regular committees:

The report of Committee D-1 on "Preservative Coatings for Structural Materials," Allen Rogers, Pratt Institute, Brooklyn, chairman, discussed the condition of steel panels under an investigation of the preparation of steel surfaces for painting. It also included a report on anti-fouling paint tests made on some of the ships of the United States Navy, of the Shipping Board and of private companies.

The report of Committee D-5 on coal and coke, A. C. Fieldner, Bureau of Mines, Pittsburgh, chairman, submitted a method of test for fineness of powdered coal and recommended the advancement to standard of tentative tests for cell space of lump coal and specifications for gas and coking coals.

Committee E-8 on nomenclature and definitions, Cloyd M. Chapman, consulting engineer, New York, chairman, reported progress in the coordination of definitions of terms and submitted definitions of terms relating to clay, and particularly the word "sand." Recommendations on definitions of terms relating to metallography and certain methods of tests were presented, together with the present status of the work on definitions for specific gravity.

Under the head of methods of testing, Committee E-1 on this subject, J. A. Capp, General Electric Co., Schenectady, N. Y., chairman, recommended for advancement to standard certain revised methods of verification of testing machines and submitted, as tentative, methods of tension testing of metallic materials, revised definitions of terms relating to methods of testing, methods of Brinell hardness testing, and compression testing of metals.

At the regular business meeting, Tuesday evening, June 24, the annual report of the executive committee was read in abstract by Secretary Warwick, preceded by the annual but brief address by the retiring president. A review of the report of the executive committee and an announcement of the election of officers was published in THE IRON AGE, June 26.

Machinery Markets and News of the Works

EXPORT PROSPECTS BETTER

Largest Business Before Machine-Tool Trade Is for Shipment Abroad

Mexican Railroad System Inquires for Large Number of Tools and Japanese General Electric Co.'s Lists Grow

With domestic demand for machine tools at extremely low ebb, the brightest prospects now engaging the attention of the trade are for export. In addition to the large inquiries for the plant of the Japanese General Electric Co. in Japan, which are being added to each week, there is a large list from a Mexican railroad system. Details regarding the latter inquiry are not available as it is being figured on by only a few companies.

It is expected in the trade that purchases for the Japanese General Electric Co. will be made by Mitsui & Co., New York, some time this month. As the inquiries have been scattered among a great many machine-tool manufacturers, no accurate estimate has been made of the total number of tools to be bought, but it is expected that the number will reach several hundred.

Two large orders for machine tools came from the automobile industry last week, the Hupp Motor Car Corporation, Detroit, purchasing about $80,000 worth of equipment, and the Wilson Foundry & Machine Co., Pontiac, Mich., bought about $75,000 worth of tools, largely boring and drilling machines. Both of these orders went to the Detroit branch of a Cleveland machinery dealer.

Business generally was very poor in the last week of June, and that month has brought out the smallest volume of business of any month of the year so far. Not only have orders fallen off, but inquiries also. June business was only a small fraction of the volume done in any of the first three months of the year.

New York

NEW YORK, July 1.

MANY machine-tool plants of the country will be shut down for two weeks' vacation. Some of them have shut down the past week and others will close their doors over the Fourth of July holidays and continue idle for at least a fortnight. This shutdown, which will be fairly general, indicates to what a low point demand for machine tools has fallen. Business has in no way improved and the outlook for the immediate future is not promising.

Export business offers a better prospect at the moment than domestic business. It is expected that Mitsui & Co. will place orders some time this month covering the large machine-tool requirements of the Japanese General Electric Co. Another export inquiry of large size comes from a Mexican railroad system, which may purchase in this country at least $200,000 worth of shop tools.

The Pennsylvania Railroad has placed an order for a 102-in. tire boring and turning mill. The General Electric Co. has bought a 6-ft. radial drill for its Schenectady works. The Magnus Co., New Haven, Conn., has ordered a 100-ton bushing press.

Machinery and equipment of the Lord Dry Dock Corporation, West New York, N. J., has been placed in the hands of the McCabe & Shearan Machinery Corporation, 50 Church Street, New York, for disposal. Machine shop, carpenter shop and power plant equipment is included in the list offered for sale.

The Robinson Bank Cage Protection Corporation, 1300 Surf Avenue, Brooklyn, recently organized with $100,000 capital stock to manufacture a new type of steel cage for banks, will receive bids from nearby firms for manufacturing its product. D. Magdol is secretary.

The Wickes Machinery Co., Claremont and West Side Avenues, Jersey City, N. J., is inquiring for all sizes of outside end-packed, duplex, pot valve, bronze plunger steam pumps.

The American Safety Device Co., 522 Fifth Avenue, New York, has purchased property on Freeman Avenue, Sherman Street and the Boulevard, Long Island City, as a site for a new factory, for which plans will soon be drawn.

The superintendent of light houses, Staten Island, N. Y., will take bids until July 7 for four 110-volt generator sets, proposal 17363; until July 16 for approximately 384 tons of wrought iron mooring chain.

The T. H. Letson Co., 50 Church Street, New York, dealer in hoisting machinery, etc., is in the market for a steam shovel on traction wheels, about 1½-yd. capacity.

The Allied American Corporation, 165 Broadway, New York, has inquiries out for machinery for manufacturing machine screws, wood screws, rolled thread bolts, nuts, etc.

Weinberger & Weishoff, 345 Madison Avenue, New York, architects, are asking bids on a general contract for a four-story automobile service, repair and garage building, 105 x 156 ft., at Broadway and 177th Street, estimated to cost $300,000 with equipment.

The International Paper Co., 100 East Forty-second Street, New York, is said to be considering the construction of a new mill at Batiscan, Que., to cost in excess of $1,000,000. A proposition is also under advisement for the installation of two new machines and auxiliary equipment at the present mill at Three Rivers, Que. The company recently placed in service a 10,000-hp. hydroelectric power plant at Feeder Dam, N. Y., in which it owns a substantial interest, and contemplates other hydroelectric power development in the near future. It is planned to issue bonds for about $10,000,000 for expansion. A. R. Graustein is president.

Hirschhorn & Krieger, 608 East 133rd Street, New York, manufacturers of iron stairs, railings and kindred products, have filed plans for a one-story addition, 75 x 100 ft. Charles Schaefer, Jr., Third Avenue and 148th Street, is architect.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until July 15 for 600 boiler tubes for the Brooklyn Navy Yard, schedule 2385.

J. Larcada, Villegas 123, altos, Havana, Cuba, is desirous of getting in contact with American manufacturers of general hardware, children's automobiles, velocipedes, hand cars, etc.

The American Chamber of Commerce in France, Rue Taitbout 32, Paris, has received an inquiry from a company at Havre desiring to get in touch with American manufacturers of agricultural and bakers' machinery, inquiry No. 17-2833.

The office of the signal supply officer, War Department, General Intermediate Depot, First Avenue and Fifty-eighth Street, New York, will take bids until July 10 for 1,000,000 ft. of wire.

The Old Reliable Motor Truck Corporation, Harris Avenue, Long Island City, with headquarters at 3921 South Michigan Avenue, Chicago, has acquired property, 200 x 350 ft., on South Jane, Marion and Sherman Streets, Long Island City, improved with a building totaling 50,000 sq. ft., and will occupy at once for a new plant and install additional equipment.

The Frissell-Claeys Co., Inc., Port Jervis, N. Y., contractor, is in the market for a steam-operated hoist, 3-drum,

The Crane Market

NEW inquiry for overhead and locomotive cranes is light, but there are still a fairly large number of inquiries pending that are expected to close shortly. The Bethlehem Steel Co., which was in the market for 11 cranes for Sparrows Point, Md., revised the list to seven cranes, three 5-ton, two 15-ton standard and one 15-ton special and one 25-ton crane and has awarded the business. Early action is expected on the two gantry cranes for the Pennsylvania Railroad, Philadelphia. The four 20-ton cranes for the Long Island Railroad will probably close in a few days. Sugar companies have been active recently in purchasing of equipment for export to Cuba, among recent purchasers being the General Sugar Co., 67 Wall Street, New York, which closed on a 25-ton, 68-ft. span electric crane and the Macabi Sugar Co., New York, a 3-ton, 62-ft. span electric crane, both from an Eastern crane builder. Construction work that may involve the purchase of cranes will begin in July on the plant of the Troy Iron & Coke Co., Troy, N. Y., by the Foundation Co., New York. It is planned to rebuild a blast furnace and install 44 by-product coke ovens.

While there is a little improvement in the Boston district, inquiries are largely for small units. The Aberthaw Construction Co., Boston, is in the market for a 7½-ton and 2½-ton crane, 44-ft. span; a Rutland, Vt., company is asking for a 10-ton crane; a Connecticut printing establishment has inquired for a 3-ton and a Worcester, Mass., company for a 2-ton hand power cranes.

Among recent purchases are:

American Cyanamid Co., 25 West Forty-third Street, New York, a 3½-ton bucket handling crane, reported to have been purchased from the Pawling & Harnischfeger Co.

Florida East Coast Railway Co., 120 Broadway, New York, a 75-ton overhead traveling crane from an unnamed builder.

Bethlehem Steel Corporation, Bethlehem, Pa., is reported to have purchased one 25-ton crane from Morgan Engineering Co., two 15-ton cranes from Cleveland Crane & Engineering Co., three 5-ton cranes from Chesapeake Iron Works and a 15-ton special crane from Alliance Machine Co.

complete with boiler, etc.; stiff-leg derrick, 50 to 60 ft. boom, and a clam-shell bucket, ¾-yd. capacity.

James G. Burke, assistant trade commissioner, United States Department of Commerce, Madrid, Spain, has information regarding a locomotive works in that section which contemplates a number of additions for the manufacture of parts, including axles, springs, tubes, pumps, bars, locomotive wheels and drivers, etc., and which will purchase machinery. The Bureau of Foreign and Domestic Commerce, Washington, has data regarding the project, reference No. 17768.

The American Consul, Rosario, Argentina, has received an inquiry from a local company for information and prices of air compressors manufactured by American companies. Catalogs are solicited, addressed to the Consulate, care of Vice-Consul H. C. Moses.

The Bergen Point Brass Foundry, 161 Hobart Avenue, Bayonne, N. J., has awarded a general contract to the Truscon Steel Co., 31 Union Square, West, New York, for a one-story foundry at Avenue A and Sixth Street.

The Eastern Jersey Power Co., Asbury Park, N. J., is disposing of a preferred stock issue of $1,250,000, a portion of the proceeds to be used for extensions and improvements in power plants and system. H. L. Clarke is president.

Fire, June 23, destroyed a portion of the plant of the Thatcher Furnace Co., St. Francis Street, Newark, N. J., with loss estimated at $25,000. A considerable portion of the damage was sustained by the tinning department. Early rebuilding is planned.

The Washington Terminal Garage, Newark, care of Marshall N. Shoemaker, 15 Central Avenue, architect, has plans for a four-story and basement automobile service, repair and garage building, 150 x 151 ft., estimated to cost $500,000 with equipment. Oakley W. Cooke is president, and Gustave W. Gehin, secretary and treasurer.

The Shiman-Miller Mfg. Co., 45 Austin Street, Newark, manufacturer of jewelry products, has awarded a general contract to the Becker Construction Co., 361 Grove Street, for a three-story addition, 95 x 95 ft., estimated to cost $75,000 with precision and other machinery. Frederick A. Phelps, 21 Fulton Street, is architect.

The Western Electric Co., 195 Broadway, New York, has awarded contract to the Taylor-Fichter Steel Construction Co., 132 West Forty-second Street, for the erection of the superstructures for the second unit at its new plant at Kearny, N. J., to cost $200,000 with machinery.

Schiffenhaus Brothers, 49 North Fourth Street, Newark, N. J., manufacturers of corrugated paper boxes and containers, have filed plans for a new factory at 526 Riverside Avenue, with one-story automobile service and repair building, to cost $125,000 with machinery. The building will be 152 x 417 ft.

Ovens, steam power equipment, conveying machinery and other mechanical equipment will be installed in the two-story and basement plant, 112 x 135 ft., to be erected by the Reitze Model Bakery, Inc., 717 Mattison Street, Neptune, N. J., estimated to cost $80,000. The McCormick Co., Inc., 127 South Negley Street, Pittsburgh, is architect and engineer. Frederick W. Reitz is president.

Louis Levy and Jacob Waters, 436 West Forty-first Street, New York, will build a one-story boiler plant at their mechanical laundry at 108-10 Bank Street, to cost approximately $40,000. Morris Whinston, 116 West Thirty-ninth Street, is architect.

Philadelphia

PHILADELPHIA, June 30.

THE American Bolt Corporation and the Hoopes & Townsend Steel Co., affiliated, Broad and Buttonwood Streets, Philadelphia, have arranged for a joint bond issue of $750,000, a portion of the proceeds to be used for expansion and financing. Justin C. Burns is president of both organizations.

The West End Aluminum Co., 1231 North Belmont Street, Philadelphia, has leased the entire building at 110 North Second Street for a new works.

Hoisting, unloading, conveying and other equipment, trucks, etc., will be installed in the addition to be erected at the plant of the Terminal Warehouse & Transfer Co., Delaware and Fairmount Avenues, Philadelphia, estimated to cost $300,000. A general contract has been let to the Turner Construction Co., 1713 Sansom Street.

C. M. Roswell, 1162 Maryln Road, Philadelphia, machinery dealer, has inquiries out for a saddle tank locomotive, four-wheel, standard gage, equipped with automatic couplers and air brakes; also for one 300 kw. generator-set, 600 volts, d.c., mounted on base and connected to a 2300-volt, 60 cycle motor, and 10 6-yd. capacity, 2-way dump cars, standard gage.

Henry K. Fort, Philadelphia, operating a metal smelting plant at 2225 North American Street, has acquired the plant and real estate of the John H. Meyer Tire Duck Co., Lewis and Ashland Streets, consisting of a one-story building and 7 acres. The new owner has plans under consideration for use of a portion of the site for expansion in the smelting and refining works.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has received an inquiry (42403) from Benjamin Rosales Pareja, P. O. Box 562, Guayaquil, Ecuador, desiring to get in contact with American manufacturers in position to furnish equipment for a local project, including one air compressor, with accessories as perforating machines, drills, forge, spare parts and repair outfit; two shovel cranes, each with capacity of 35 cu. ft., with spare parts and crude oil engine; one leveling outfit; two crude oil tractors, caterpillar wheels, 30 to 40 hp.; 10 dump trailer trucks, each 7 cu. yd. capacity; 10 dump wagons for use on rails, 35 cu. ft. capacity each; 3 iron gates for material hoppers; 2 oil storage tanks; 2000 lb. octagonal steel for ⅞-in. drills; 1000 lb. octagonal steel for ¾-in. drills; 750 lb. square steel for 1¼-in. bars; 300 lb. of square steel for wedges of 2 in.; 50 bars with one end flat and one end pointed; 1000 lb. of assorted steel; pickaxes, miners' hammers, etc.

The Atlantic Refining Co., 260 South Broad Street, Philadelphia, has disposed of a note issue of $15,000,000, a portion of the proceeds to be used for expansion.

Keppel & Co., Chester, Pa., have inquiries out for an air compressor, belt-driven, 100 to 150 cu. ft. of air per min.

The Department of Streets and Public Improvements, Trenton, N. J., has secured an option on the two machine shops of the John E. Thropp Sons' Co., Lewis Street, valued at $500,000. It is purposed to take over the property for municipal shops and other smaller works of this character owned by the city, will likely be consolidated at the new location. The Thropp company plans to discontinue machine shop work, but will maintain its foundries, flint and spar mills, and other machinery manufacturing works.

Manual training equipment will be installed in the new junior high school No. 4, to be erected in the Dayton section by the Board of Education, Trenton, N. J., estimated to cost $1,325,700. Foundations will be laid soon. Similar equipment will also be installed in junior high school No. 3, West State Street, now nearing completion.

The Borough Council, Doylestown, Pa., M. S. Cogan, secretary, will take bids until July 28 for one electric motor-driven air compressor, electric-operated centrifugal pumping unit, air lift receivers, valves, stand-pipe, special castings and miscellaneous equipment for the municipal waterworks. Plans at the office noted, or at the office of William H. Boardman, 426 Walnut Street, Philadelphia, engineer.

The Peerless Sand Cement Brick Co., York, Pa., will begin the erection of a new plant to cost about $45,000 with machinery. The company was organized recently with M. L. Strayer, president, and J. W. Neuman, treasurer, both of York.

Fire, June 24, destroyed the tipple at the plant of the Yukon Coal Co., Greensburg, Pa., with loss estimated at $30,000 including equipment. It is planned to rebuild.

Edward W. Peter, 103 Lower Mulberry Street, Danville, Pa., is in the market for a double leg steam forging hammer, about 2000 lb. capacity.

The Reading Engineering Works, 116-20 Washington Street, Reading, Pa., is in the market for a portable cylinder-boring and valve-seating outfit for steam engine work; also a 150-hp., three-phase, 60-cycle, 440-volt motor.

The George Sachsenmaier Co., 926 North Third Street, Philadelphia, dealer in electrical machinery, is in the market for a 300 kw. generator, 250 volts, engine-operated.

The Bridgman Co., Philadelphia, manufacturer of steam and plumbing supplies, boilers, etc., has acquired by lease the two story, 15 x 100 ft. plant of the former Allentown Mfg. Co., Allentown, for a warehouse and branch plant. Fred J. Sommer will be manager of the Allentown branch.

New England

BOSTON, June 30.

JUNE will go down in New England machine-tool history as one of the leanest months on record. The very best showing, so far as reported, fails to measure up to the ordinary monthly expenses. The Lynd-Farquhar Co., Boston, was low bidder on metal-working equipment for the Grant school Boston, the firm's bid being $204.14 under the nearest competitor. Otherwise business the past week was confined to not more than a half-dozen lathes, some new and others used. Sellers of used tools are figuring closely on business and are meeting stiff competition from manufacturing establishments with excess equipment, as well as auction sales.

A marked recession is noted in the demand for small tools and repair parts, indicating a low rate of operation by most New England industrial plants.

The Board of Education, Newton, Mass., is taking bids for a three-story technical and classical high-school addition to cost approximately $750,000.

All bids for the proposed New Bedford, Mass., fire department repair shop were rejected, as they exceeded the appropriation. Revised plans will shortly be made public.

Bids closed July 1 for a proposed trade school for Middletown, Conn. R. W. Sellow, Central National Bank Building, P. O. Box 467, Middletown is the architect.

Permit has been granted the Reed & Prince Mfg. Co., Duncan Avenue, Worcester, Mass., for alterations to a four-story, 73 x 90 ft. plant unit, involving $19,000. Plans are private.

The Smith Carriage Co., 39 Park Street, Springfield, Mass., has awarded contract for a four-story and basement, 101 x 157 ft. plant to cost $150,000. Norman H. Fowler is president of the company. H. C. Hearne, 387 Main Street, Springfield is the architect.

Jenks & Ballou, Providence, R. I., engineers have awarded contracts for an extension to the Narragansett Electric Lighting Co. plant, to increase the capacity approximately 50 per cent. Equipment for pulverized fuel will be installed At present it utilizes fuel oil for generating electricity.

The D-Flecto Light Co., Danbury, Conn., is equipping a plant for the manufacture of automobile headlights. Dr. F. A. Pickett is president; Clifford B. Wilson, Bridgeport, Conn., vice-president; Gilbert Horner, secretary, and M. Robert Smith, treasurer. With the exception of Mr. Wilson, all reside in Danbury.

J. F. Foster, 205 Old South Building, Boston, machinery dealer, has inquiries out for a compound steam and air compressor, 650 to 800 cu. ft. per min. capacity, operating at 60 to 75 lb. pressure.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until July 8 for 2300 lb. of sheet copper for the Portsmouth Navy Yard, schedule 2390.

The Holyoke Water Power Co., Holyoke, Mass., operating a hydroelectric power station, has authorized an increase in capital from $1,200,000 to $3,000,000, a portion of the proceeds to be used for extensions and improvements.

The Cement Block Co., Coolidge Street and Glenn Road, Watertown, Mass., has plans for a new factory at Medford, Mass. Power molding and other machinery will be installed. Jacob Freedman heads the company. Winebaum & Wexler, 28 School Street, Boston, are the architects.

The H. F. Livermore Co., 100 Cummington Street, Boston, Mass., will begin the erection of a two-story machine shop at its plant at Allston Station, 75 x 250 ft., estimated to cost $100,000 with machinery.

Fairbanks, Morse & Co., 900 South Wabash Avenue, Chicago, are said to have secured options on property heretofore used as a shipyard at North Bristol, Conn., and plan the establishment of an Eastern branch plant.

Clark W. Holcomb, president of the New Bedford Boiler & Machine Co., 42 Front Street, New Bedford, Mass., is considering the erection of a three-story automobile service, repair and garage building, 42 x 100 ft., estimated to cost $80,000. Edgar Zeliam, company address, is architect.

The Maine Central Railroad Co., Portland, Me., has rejected bids for the erection of its proposed engine house and repair shop at Bingham, Me., 90 x 100 ft., and will hold the project in abeyance. B. T. Wheeler is chief engineer.

The Draper Corporation, Hopedale, Mass., manufacturer of cotton looms, announces that it will operate its entire works with electric current received from the New England Power Co., which has developed large water powers in western Massachusetts and southern Vermont. The immediate power needs are for about 3000 hp., and the contract calls for additional power as it may be required in the next 15 years. The Draper Corporation is contracting for a large number of electric motors, for only one-third of its equipment is now electrically driven and it is proposed to electrify the entire works. The New England Power Co. recently put in operation a hydroelectric unit of 40,000 hp. on the Deerfield River in southern Vermont, this making possible the furnishing of power to additional large industries of its territory.

Chicago

CHICAGO, June 30.

THE past week has been extraordinarily quiet in the machine tool trade, and for some sales organizations June will prove to be the poorest month thus far this year from the standpoint of business booked. Other local machine-tool houses which will participate in the Chicago Board of Education orders will not fare so badly, but definite awards of that list will not be made public until the next meeting of the board on July 9. During the week it put out two additional inquiries for the electric shop of the Crane Technical High School, consisting of a pendulum foot press and a squaring shear. Neither the Santa Fe nor the Burlington have taken any further action on their respective lists. Industrial business is light, but an old list of the Pullman Co. has been received with the possibility that some of the items may be closed.

The Ardmore Mfg. & Supply Co., 3703 Wentworth Avenue, Chicago, has been incorporated with $5,000 capital stock to manufacture window squeegees. A plant has been leased at the address given and proposed equipment purchases may include one or more punch presses. Executives include John J. Miller, Guy L. Matthews, Vincent Miller and Bertha Matthews.

Wertz & Thiele, 1238 South Ashland Avenue, Chicago, are taking bids through Wolf, Sexton, Harper & Trueax, Inc., 7 West Madison Street, on remodeling a three-story shop, 50 x 150 ft. Upper floors will be used for automobile painting and the other portion of the building for an automobile repair shop.

The Illinois Steel Co., 8801-59 Mackinaw Avenue, South Chicago, will construct a one-story winch house, 14 x 19 ft., an office building, 14 x 35 ft., a two-story switchboard house, 12 x 16 ft., and a one-story shop, 15 x 46 x 69 x 276 ft., to cost $63,000.

The Interstate Iron & Steel Co., 104 South Michigan Avenue, Chicago, is inquiring for a No. 4 Nazel air hammer, direct connected to 15 hp., 440-volt, 3-phase, 60 cycle motor for handling 5 x 5 squares.

The Calumet Gas & Electric Co. will soon start the construction of an electric power station on East Fifth Avenue, Gary, Ind., to cost $100,000.

The Calumet Engineerring Corporation, East Chicago, Ind., has awarded contracts for the first unit of a plant to cost $40,000. The company will produce fuel gas from low grade oil and the daily output at the start will be about 5,000,000 cu. ft.

The Builders Sideboard Co. is erecting a three-story plant at 215 Seventh Street, N. E., Minneapolis, Minn., to cost $100,000. Cabinet work and building fixtures for homes will be manufactured.

The Jordan Machine Tool Co., 913-15 Washington Avenue South, Minneapolis, has purchased the Bedard Shoe Machinery Co., Longfellow Avenue and East Twenty-eighth Street. The Jordan company will utilize the Bedard plant for the manufacture of Jordan cylinder boring and regrinding machines and will continue the manufacture and sale of Bedard shoe machinery.

The Red River Sugar Co., Grand Forks, N. D., has purchased 80 acres between the Great Northern and Northern Pacific Railway tracks in East Grand Forks as a site for a sugar beet factory.

The Paidar Co., 1214 North Wells Street, Chicago, is in the market for two drill presses, one 14 in. lathe and an automatic screw machine.

The Buda Co., 154th Street, Harvey, Ill., manufacturer of railroad appliances and equipment, will soon take bids for a one-story building, 100 x 150 ft., estimated to cost $62,000. Chatten & Hammond, 160 North La Salle Street, Chicago, are architects.

The G. & W. Refrigerator Co., Cloquet, Minn., F. Geisler, president, affiliated with the Cloquet Lumber Co., is taking bids on a general contract until July 10 for a new plant at Duluth, Minn., to manufacture refrigerators and refrigerating equipment, to be two-stories, 100 x 143 ft., estimated to cost $105,000 with machinery.

The Common Council, Miller, S. D., has plans for extensions and improvements at the municipal electric power plant, to include the installation of boiler and other equipment. G. C. Briggs is city clerk.

The Survus Rubber Co., 401 Central Park Building, Rock Island, Ill., is taking bids on general contract for a three-story plant, 80 x 150 ft., estimated to cost $90,000 with machinery. It will be the first of a number of plant units. Cervin & Horn, Safety Building, are architects.

Bids will be received by the city utilities commission, Owatonna, Minn., until July 8 for its proposed municipal electric light and power plant, including two 500 kw. bleeder type turbo-generators; two 300 hp. boilers; stack; switchboard, and auxiliary equipment, also complete underground heating system and equipment in the business district. Plans are at the office noted, or the office of Arthur L. Mullergren, 555 Gates Building, Kansas City, Mo., engineer. M. R. Cashman is chairman of the commission.

The Common Council, Tama, Iowa, contemplates the installation of centrifugal pumping equipment in connection with proposed extensions in the waterworks, for which a fund of $40,000 is being arranged.

The Union Pacific Railroad Co., 58 East Washington Street, Chicago, has arranged a fund of $2,512,548 for extensions and improvements in car and locomotive shops, including proposed new shops and equipment. An appropriation of $1,204,288 has been made for the construction of water and fuel distributing and storage plants.

Manual training equipment will be installed in the high school to be erected at Iowa City, Iowa, estimated to cost $175,000, for which bids are being received on a general contract until July 15. Proudfoot, Bird & Rawson, Hubbell Building, Des Moines, Iowa, are architects.

Detroit

DETROIT, June 30.

BIDS will be received by the city clerk, Jackson, Mich., until July 9, for a sewage pumping station for the municipal sewage plant, to include electrically-operated pumping equipment and auxiliary machinery. Plans are on file at the office noted. J. E. Whittaker is city manager.

Berlinger & Co., 219 Ottawa Avenue, N. W., Grand Rapids, Mich., manufacturer of mechanical equipment, has awarded a general contract to I. K. Persons & Son, 303 Jefferson Avenue, S. E., for a two-story and basement machine shop, 50 x 100 ft., to cost $30,000. The Marnette Engineering Co., Houseman Building, is architect and engineer.

The Detroit, Toledo & Ironton Railroad, Detroit, owned and operated by Henry Ford, has plans for the electrification of its line, with work to include power plant, automatic power substations, transmission and feeder lines, etc.

The Michigan Artificial Ice Products Co., Real Estate Exchange Building, Detroit, has awarded a general erection contract to David Little, 702 Locust Street, Kalamazoo, Mich., for its ice-manufacturing plant at Lynn and Barnes Streets, Albion, Mich., estimated to cost $85,000. Milton Carmichael is secretary.

The Pere Marquette Railroad Co., Detroit, has appropriated a fund of $787,000 for the completion of its new car and locomotive shops at Wyoming, including the installation of equipment.

The Jennison Hardware Co., 901 North Water Street, Bay City, Mich., has awarded a general contract to Henry C. W. Webber, Bay City, for rebuilding the portion of its distributing and storage works destroyed by fire several months ago. The structure will be five-stories, 95 x 100 ft., to cost $125,000. Albert Kahn, 1000 Marquette Building, Detroit, is architect. W. F. Jennison is president.

Milwaukee

MILWAUKEE, June 30.

SUMMING up in a general way, sales of machine tools during June will figure somewhat larger than May, but run considerably below June, 1923. Hesitancy is still pronounced in inquiry as well as buying and only the most urgent needs are being filled. Sentiment is improving, however, and the opinion is that after industries pass the mid-year vacation period a healthier state of affairs may be expected.

Charles W. Nash, president Nash Motors Co., Kenosha, Wis., answering rumors, has made a public statement that no machinery of any kind has been purchased for retooling the former Mitchell motor works at Racine, Wis., and there is no immediate intention of reopening this plant. The Nash company, however, proposes to organize a company to take over the management and operation of this unit. The requirement of tools and machinery, when finally settled upon, will be one of the largest placed in recent years.

The Walker Mfg. Co., Racine, Wis., manufacturer of automobile jacks and other specialties, is erecting a two-story extension, 40 x 120 ft. Offices now on the ground floor will be installed in the addition and the space thus released used for manufacturing. Some new equipment will be purchased for producing pressed steel parts, stampings, etc. W. T. Walker is president.

The Milwaukee Board of Industrial Education, A. O. Muehl, secretary, closes bids July 3 for preliminary work on the substructure of the third unit of the Central Continuation School, to be erected on State Street. Each unit is seven stories, 125 x 200 ft., and the average cost is $1,250,000. The superstructure is to be built during the fall and winter and purchases of shop tools, equipment, etc., will probably be made about Jan. 1. Van Ryn & DeGelleke, 114 Grand Avenue, are the architects.

The La Crosse, Wis., Industrial Association has purchased for $41,000 the real estate, buildings and equipment of the defunct Matthews Mfg. Co., on behalf of a group of Chicago capital, which will make alterations and do some retooling for the production of refrigerators. The plant contains 45,000 sq. ft. and was appraised at $172,000. Reopening is planned for Aug. 1.

The Standard Oil Co. (Indiana), 68 Wisconsin Street, Milwaukee, will invest $100,000 in the construction and equipment of a general service and storage garage, 55 x 150 ft., part two stories and basement, at Barclay and Walker Streets, Milwaukee. The general contract has been let to the Universal Construction Co., local.

The Antigo, Wis., Electric Sign Mfg. Co. has leased the two-story shop, 40 x 50 ft., at Fourth Avenue and Dorr Street, and is installing some new and used drill presses, grinders, forming press, squaring shears, etc., for the production of electric advertising signs. An oxy-acetylene welding and cutting unit will be purchased. N. A. Fowler is president and general manager.

The Standard Sanitary Mfg. Co., Pittsburgh, Pa., will close bids July 12 for a five-story manufacturing and warehousing building, 80 x 115 ft., at Seventeenth Street and St. Paul Avenue, Milwaukee. It will replace the present shop and warehouse in leased quarters at 311-315 Fifth Street. The investment will be upwards of $150,000. The engineer is the Hunting-Davis Co., 1150 Century Building, Pittsburgh. F. E. Fowle is branch manager at Milwaukee.

M. Keith Dunham, 110 South Dearborn Street, Chicago, has placed the general contract with Meredith Brothers, 253 Washington Street, Milwaukee, for a one-story manufacturing building, 80 x 180 ft., at Twenty-seventh and Greves Street, this city.

The Swanson Toy Block Co., Chicago, has leased the plant of the Montana Tractor Co., at Oconto, Wis., and will install new machinery for the production of hardwood products, including toys, tool handles, rules, gages, etc. M. R. Barger is local manager.

The Milwaukee Board of School Directors has accepted the low bid of the Newton Engineering Corporation, 185 Mason Street, local, for construction of the east center wing addition to the Boys' Technical High School on College Place. The work is to be completed within one year. While no date has been set for taking bids on the equipment, this probably will not be purchased until Dec. 1 or Jan. 1.

E. H. Smith, New London, Wis., will let contracts about July 10 for a two-story garage and service building, 60 x 115 ft., to cost about $35,000.

The Village Board, Kimberly, Wis., is taking bids for the entire equipment of a new pumping station, and a steel tank and tower, for additions to the municipal water plant to cost about $75,000. A. E. McMahon, Menasha, Wis., is consulting engineer. H. W. Langenberg is secretary.

Buffalo

BUFFALO, June 30.

FIRE, June 27, caused by an explosion, destroyed a portion of the welding and metal stamping shops of the Trico Products Corporation, 624 Ellicott Street, Buffalo, with loss reported at $20,000 including equipment. It is planned to rebuild.

The Republic Light, Heat & Power Co., Tonawanda, N. Y., wil lmake extension and improvements in its plant on East Niagara Street to cost about $100,000 including additional equipment.

The Chateaugay Ore & Iron Co., Chateaugay, near Malone, N. Y., has plans under way for a new works for iron ore production, estimated to cost about $250,000 with equipment. It will replace a works recently destroyed by fire. The installation will comprise a magnetic ore separator, power apparatus and auxiliary machinery.

The Power Corporation of New York, Inc., Watertown, is disposing of a preferred stock issue of $2,000,000, the proceeds to be used in part to secure a controlling interest in the Northern New York Utilities, Inc., of the same place. The company has hydro-mechanical power stations with output of 37,500 hp., and purposes to remodel such plants for hydroelectric power operation and install additional machinery. Present hydroelectric power plants and steam-operated stations will also be expanded. J. N. Carlisle is president.

Manual training equipment will be installed in the proposed two-story high school to be erected at Seneca Falls, N. Y., estimated to cost $300,000, for which bids will soon be asked on general contract. Tooker & Marsh, 101 Park Avenue, New York, are architects. H. A. Cramer is president of the school board.

Fire, June 21, destroyed a portion of the mill and plant of the General Crushed Stone Co., near Akron, N. Y., with loss estimated at $200,000 including crushing, conveying and other machinery. Plans for rebuilding are under consideration. Headquarters of the company are at Easton, Pa. A portion of the power house of the Noble Gypsum Co., in the same section, was also destroyed and will be rebuilt.

Manual training equipment will be installed in the high school addition now in progress at Dunkirk, N. Y., estimated to cost $500,000. The Board of Education is in charge.

The Jefferson Union Co., Lockport, N. Y., Robert E. Bryant, vice-president, has acquired the buildings and property of the DeLaney Products Corporation at a mortgage foreclosure sale. The new owner specializes in the manufacture of pipe couplings, and will use a portion of the acquired property for extensions.

The Endicott Forging & Mfg. Co., Inc., Endicott, N. Y., is installing a Mesta pickling machine and building a brick addition to its shipping room.

The Bausch & Lomb Optical Co., Rochester, N. Y., is in the market for a Bliss press, No. 19, 19½ or 20, inclinable.

Contract has been awarded to Chapman & Graham, 132 Blackstone Avenue, Jamestown, N. Y., for a two-story brick addition to the plant of the Dahlstrom Metallic Door Co., East Second Street, Jamestown, to cost about $100,000. Considerable metal-working machinery, to include presses, punches and shears will be required. H. E. V. Porter is president.

Stockholders of the International Casement Co., 84 Hopkins Avenue, Jamestown, N. Y., have approved a stock increase from $200,000 to $1,000,000. A portion of the proceeds will be used for extensions, improvements and additions to the plant. Steel and metal window frames are manufactured.

Manual training and vocational departments will be installed in the proposed elementary school to be erected at Newark, N. Y., for which a bond issue of $225,000 is being arranged by the Board of Education. Carl C. Ade, Rochester, N. Y., is the architect.

St. Louis

ST. LOUIS, June 30.

WILLIAM J. KOCH, 3938 Garfield Street, Kansas City, Mo., architect, is drawing plans for a one and two-story automobile service, repair and garage building, totaling 75,000 sq. ft. floor area, estimated to cost $400,000 with equipment. George E. McIntyre, 409 East Fifty-fourth Street, is engineer.

The Arkansas Central Power Co., Little Rock, Ark., is disposing of a bond issue of $1,000,000, a portion of the proceeds to be used for extensions and improvements in plants and system. E. W. Hill is vice-president.

The Cly Auto Manifold Lock Co., 230 Loban Building, St. Joseph, Mo., E. V. Cly, secretary, is desirous of getting in touch with a company in position to manufacture a special automobile lock on a contract basis.

The United States Water & Steam Supply Co., 1315 West Twelfth Street, Kansas City, Mo., pipe, pipe fittings, etc., has awarded a general contract to Peter Larson, 404 Oak Street, for a two-story and basement distributing and storage building, 110 x 130 ft., at 1719-25 Locust Street, estimated to cost $55,000. H. S. Ferguson is president.

The Common Council, Gurdon, Ark., is considering the installation of electric-operated pumping equipment in connection with a new waterworks plant and system, estimated to cost $100,000 complete. W. H. Trevillion is mayor, in charge.

The Board of Public Service, St. Louis, will receive bids on a general contract until July 22 for a three-story union market and automobile service, repair and garage building, estimated to cost $850,000. A cold storage and refrigerating plant will be installed in the market section, and general machine shop in the garage portion. This latter is estimated to cost $200,000 of the gross amount.

The Frazier-Davis Construction Co., Arcade Building, St. Louis, general contractor, is in the market for a 40-ton traveling crane, locomotive type.

The St. Louis Pump & Equipment Co., Spring Avenue and Forest Park Boulevard, St. Louis, has tentative plans for rebuilding the portion of its factory recently destroyed by fire with loss estimated at $27,000, including equipment.

Manual training equipment will be installed in the proposed high school to be erected at Paragould, Ark., estimated to cost $175,000, for which Mann & Stern, Little Rock, Ark., are architects.

Manual training equipment will be installed in the new high school to be erected at Jefferson City, Mo., estimated to cost $300,000, for which plans will be prepared by Owen, Payson & Carswell, Interstate Building, Kansas City, Mo., architects.

The Mohawk Valley Irrigation District, Yuma., Ariz., composed of L. A. Macey, A. B. Ming and associates, contemplates the installation of electrically operated pumping machinery and equipment in connection with a series of pumping plants. The work is estimated to cost $750,000.

L. Boehn, 615 Chamber of Commerce Building, St. Louis, is in the market for a used 1000-kw., 3-phase, 60-cycle, 2300-volt high pressure horizontal type, condensing turbo generator unit complete.

Pittsburgh

PITTSBURGH, June 30.

THE Mitchell Spring & Mfg. Co., Johnstown, Pa., recently formed to take over the local plant and business of the Mitchell Spring Works, 820 Horner Street, is having plans drawn for a one-story addition, 100 x 100 ft., estimated to cost $45,000. Gray & Chaflin, Colonial Building, are engineers. Fred A. Meckert is president and Harvey Mitchell, treasurer.

The J. P. Ward Foundry Co., Blossburg, Pa., plans the installation of additional foundry equipment for the manufacture of pipe fittings, etc. J. E. Willis is one of the heads of the company.

The Virginian Power Co., Charleston, W. Va., has plans under way for a hydroelectric generating plant near Hinton,

W. Va., estimated to cost $850,000 with machinery. It is also planning for a steel tower transmission line to Portsmouth, Ohio, where the local properties of the Portsmouth Street Railway & Light Co. recently were acquired. The Virginian company is operated by Henry L. Doherty & Co., 60 Wall Street, New York.

Fire, June 23, destroyed a portion of the plant of the Capital City Machine Shops, West Charleston, W. Va., with loss estimated at $35,000 including equipment. It is planned to rebuild. The shops of the W. G. Mead Boiler Works, on adjoining site, were also damaged.

The Railway & Industrial Engineering Co., Greensburg, Pa., manufacturer of electric transmission and switching equipment, is pushing construction on a new one-story fabricating shop, primarily for the production of outdoor steel substations. The equipment installation is expected to develop an output of about 300 tons per month in this department. The present steel fabricating shop will be dismantled and razed later.

The Hillman Coal & Coke Co., First National Bank Building, Pittsburgh, plans for extensions and betterments in its Ella coal tipple on the Monongahela River, near Webster, Pa., including the installation of additional equipment.

The Appalachian Power Co., Bluefield, W. Va., is disposing of a bond issue of $4,000,000, a portion of the proceeds to be used for extensions in power plants and system and purchase of controlling interest in the American Electric Power Co., a holding organization for a number of power companies operating in Pennsylvania, West Virginia and Virginia.

The Bluestone Motor Co., Bluefield, W. Va., is perfecting plans for a five-story service, repair and garage building estimated to cost $80,000 including equipment. L. H. Neff is general manager.

The Virginia Tire & Rubber Co., High Lawn, St. Albans, W. Va., will soon begin foundations for a new plant on site of its former mill, destroyed by fire several months ago. It will cost $75,000 with machinery. G. C. Hedrick is president.

Machine shop equipment and an electric crane will be purchased at an early date by the United States Radiator Co., Corry, Pa., in connection with additions and improvements under way. The new machine shop will be one story, 165 x 175 ft. The Rogers Construction Co., Corry, has the contract.

The Capitol City Machine Works, Charleston, W. Va., was destroyed by fire June 23 with a loss of $30,000. The plant will be rebuilt.

Fire, June 27, caused by an explosion, destroyed a portion of the plant of the United Refining Co., East End., Warren, Pa., with total loss of $90,000. The damaged portion will be rebuilt at once.

Cleveland

CLEVELAND, June 30.

TWO large orders for machinery came from the automobile industry the past week. The Hupp Motor Car Corporation purchased about $80,000 worth of machine tools, mostly production machinery, for the manufacture of a new model motor car, and the Wilson Foundry & Machine Co., Pontiac, Mich., which makes castings for the Willys-Overland Co. placed $75,000 worth of machine tools, largely boring and drilling machines, for machining motors. Both of these orders went to the Detroit branch of a Cleveland machinery house. The 18 machines recently inquired for by the Cleveland Board of Education were divided among dealers. The 12 machines recently asked for by the Cleveland Water Works Department have not yet been purchased.

Aside from the business noted there was little activity in the market and little is in prospect, although some dealers report a slight improvement in the demand for used machinery. Reports generally indicate that June sales fell considerably below the May volume.

The machinery equipment of the Clark-Mesker Co., Cleveland, including about 50 machines was offered at auction June 26, and was purchased mostly by dealers. As a rule it brought quite low prices and the aggregate realized from all the equipment was about $50,000 or not much more than had previously been offered by a dealer in a lump sum bid for the entire lot.

The Geneva Metal Wheel Mfg. Co., Geneva, Ohio, will erect a cupola building, 30 x 63 ft.

The White Motor Co., Cleveland, is preparing plans for a two-story and basement factory, 70 x 280 ft. The Watson Co., 4614 Prospect Avenue, Cleveland, is the architect and engineer.

Plans for the new works of the C. O. Bartlett & Snow Co., Cleveland, have been completed and the Allen-Osborn Co., 701 Rose Building, is taking bids for construction. It will be one-story, with 50,000 sq. ft. of floor space.

The Cleveland Electric Illuminating Co. will erect a new central steam heating plant 112 x 238 ft., with a capacity of 4500 hp. The equipment will include three 1500-hp. boilers, ash conveying equipment, feed water heaters and pumps and several d.c. motors. Powdered coal will be used for fuel. E. J. Cook is the company's engineer.

The Ideal Laundry Co., Toledo, Ohio, has taken bids for a $50,000 power house. S. M. Jokel, 1553 Nicholas Building, Toledo, is the architect.

Manual training and vocational departments will be installed in a new high school at Firestone Park, Akron, Ohio, estimated to cost $600,000, for which bids are being received by the Board of Education on a general contract until July 15.

The Toledo Machine & Tool Co., Toledo, Ohio, manufacturer of sheet metal stamping presses, etc., has completed plans for a reorganization and the raising of a fund of $2,500,000 for expansion purposes.

The Libby-Owens Sheet Glass Co., Nicholas Building, Toledo, has awarded a general contract to the A. Bentley & Sons Co., local, for a one-story grinding and polishing department estimated to cost $200,000 with machinery. Lockwood, Greene & Co., Cleveland, are architects and engineers.

Cincinnati

CINCINNATI, June 30.

THE past week was quiet in machine-tool circles, although a number of manufacturers report orders for several machines. Prospective railroad buying has not materialized. The Burlington is said to have made reservations for a number of tools on its various lists, but has not issued formal orders. Action has been deferred on the Norfolk & Western list, but it is expected that the tools for Portsmouth shops will be bought next week. The Southern Railroad will probably close for tools for the Birmingham shops in the immediate future. There has been some single tool buying by a number of the smaller railroads.

Industrial buying is at a low ebb, although a number of orders for replacements have been received from automobile manufacturers. Inquiry has dropped off sharply. Dealers in used tools report business holding up fairly well, but not nearly as active as a month ago.

The Liberty Spreader Co., Liberty, Ohio, has been incorporated to manufacture spreaders and has taken over the plant of the Rude Co., formerly one of the R. L. Dollings subsidiaries. J. E. Roughan is president.

The American Seeding Machine Co., Springfield, Ohio, has awarded contract for a foundry addition, for core room purposes. Core ovens will be installed. Additional space was required to more efficiently take care of the demand for the company's products.

The Ohio Steel Foundry Co., Springfield, Ohio, has awarded contract for an addition to house core oven equipment.

The Columbus Bolt Works Co., West Street, Columbus, Ohio, has awarded a general contract to E. H. Latham, 60 East Broad Street, for a number of plant buildings, estimated to cost $300,000 with equipment. Lockwood, Greene & Co., Cleveland, are architects and engineers. J. R. Poste is president.

The Kentucky Utilities Co., Louisville, is disposing of a bond issue of $4,500,000, a portion of the proceeds to be used for plant and system extensions, including the acquisition of additional properties. Harry Reid is president.

Fahnle & Dietrich, Cincinnati, manufacturer of sheet metal products, have removed their works to larger quarters at 1711 John Street, where additional equipment will be provided. Albert Fahnle and George F. Dietrich head the company.

The Dayton Malleable Iron Co., Dayton, Ohio, has plans for an addition to be equipped as a coal-powdering mill for pulverized fuel for power service at the plant, estimated to cost $45,000 with machinery. Schenck & Williams, Dayton, are architects.

The Board of Works, Minster, Ohio, has tentative plans for rebuilding the municipal electric power plant. Considerable additional machinery will be installed, changing the plant from direct current to alternating current. M. W. Utz is superintendent.

Ovens, power equipment, conveying and other machinery will be installed in the six-story and basement baking plant, 47 x 120 ft., to be erected by the Green & Green Co., Dayton, Ohio, estimated to cost $250,000 with machinery. Schenck & Williams, Mutual Home Building, are architects. Weston Green is President.

Gulf States

BIRMINGHAM, June 30.

TENTATIVE plans are being considered by the Phillips Petroleum Co., Bartlesville, Okla., for the rebuilding of the portion of its gasoline refinery at Cross Plains, Tex., recently destroyed by fire with loss estimated at $75,000, including equipment.

The Common Council, New Smyrna, Fla., will soon take bids for an addition to the municipal electric light and power plant. Two generating units to total 1400 hp. will be installed. George J. Ott is city manager.

H. W. Dexter, Bisbee Building, Jacksonville, Fla., machinery dealer, has inquiries out for a steam-operated pile driver, a 5 or 6 ft. radial drill and one set of stiff-leg derrick irons, for derrick with 50-ft. boom, 5 to 7 tons capacity.

The Southwestern Power & Light Co., Fort Worth, Tex., is disposing of a preferred stock issue of $2,000,000, a portion of the proceeds to be used for extensions and betterments in power plants and system. A. S. Grenier is president.

The Texas Power & Light Co., Dallas, Tex., has negotiations under way for the purchase of the plant and property of the Clarksville Light Co., Clarksville, Tex., and contemplates extensions in this section and the installation of additional equipment.

The Southland Lumber Co., Shreveport, La., recently formed with a capital of $150,000, has awarded a general building contract to Paul Anger, Beaumont, Tex., for a planing mill and woodworking plant. The equipment is estimated to cost $50,000. It is proposed to build a one-story steam power house. J. P. Annan, Shreveport, is architect. E. B. Fitzgerald, 4035 Mansfield Road, Shreveport, is president.

The El Paso Electric Co., El Paso, Tex., has arranged for a note issue of $800,000, a portion of the proceeds to be used for extensions in power plants and system. The company is operated by Stone & Webster, Inc., 147 Milk Street, Boston.

Work has started on the proposed new plant on Exposition Avenue for the W. A. Browning Machinery Co., 3025 Elm Street, Dallas, Tex., for which a general contract was recently awarded to H. T. Apple, Dallas. It will be one-story, 50 x 300 ft., with L extension 40 x 100 ft., estimated to cost $60,000 with equipment. Flint & Broad, Andrews Building, are architects.

The Common Council, Whitney, Tex., contemplates the installation of centrifugal pumping equipment in connection with a new waterworks plant. The Municipal Engineering Co., Praetorian Building, Dallas, Tex., is engineer.

The Chamber of Commerce, Brownwood, Tex., is interested in a project to construct and operate a hydroelectric generating plant at the Pecan Bayou in connection with a proposed irrigation project reclaiming 30,000 acres. The entire installation is estimated to cost $1,500,000. It is purposed to organize a company to carry out the work.

The Peden Iron & Steel Co., Fort Worth, Tex., has preliminary plans for rebuilding the portion of its works destroyed by fire, June 20 with loss estimated at $100,000, including buildings and equipment.

Manual training equipment will be installed in the junior high school to be erected at Meridian, Miss., estimated to cost $150,000, for which foundations will soon be laid. P. J. Krouse, Meridian, is architect.

The El Paso Electric Railway Co., El Paso, Tex., is reported to be contemplating the erection of a one-story addition to its power plant, estimated to cost $90,000 with equipment. A turbo-generator and auxiliary apparatus will be installed.

The National Refining Co., Breckenridge, Tex., has plans for the installation of additional equipment at the plant of the North Texas Refinery, Greenville, Tex., recently taken over, estimated to cost $50,000.

The Southern Utilities Co., Bradentown, Fla., is perfecting plans for a new steam-operated power house on the Manatee River, consisting of two main operating units, 1000 kw. and 300 kw. turbo-generators, the last noted for auxiliary service. It will cost $85,000 with machinery. T. D. Hayes is local manager.

The Common Council, Homestead, Fla., plans the installation of electric-operated pumping equipment in connection with its proposed waterworks and sewage system, for which it is proposed to vote bonds for $235,000 at a special election July 8.

A corporation now being organized with capital stock of $50,000 will manufacture butter-wrapping machines. Awards soon will be let for manufacturing, all of which will be done by contract. Address, care of J. T. Brown, Flowers & Brown, Jackson, Miss.

Indiana

INDIANAPOLIS, June 30.

PRELIMINARY plans are being arranged by the National Fireproofing Co., Fulton Building, Pittsburgh, for a number of additions to its plant at Hobart, Ind., including improvements in the present works and installation of additional equipment, estimated to cost $500,000. Hollow tile and kindred products are manufactured.

Bids are being asked by the Board of School Trustees, Mooresville, Ind., until July 11 for the erection of a central power plant for service at the local schools, including brick stack, equipment, etc. W. H. Garns, Fletcher Trust Building, Indianapolis, is architect.

The De Rhodes Motor Co., South Bend, Ind., will soon begin the erection of a three-story service, repair and garage building, 65 x 165 ft., estimated to cost $180,000 including equipment.

The National Malleable & Steel Castings Co. is contemplating additions to its Indianapolis plant, bids for which will be asked shortly. Details of the extensions have not been announced.

The H. C. Stutz Motor Car Co., Indianapolis, is perfecting plans to devote a portion of its works to the manufacture of taxicabs. Regular passenger automobile manufacture will be continued as heretofore. Harry C. Stutz is president.

The Briskin Mfg. Co., Indianapolis, recently organized, will operate a works at 623 North Illinois Street for the manufacture and repair of automobile radiators and kindred sheet metal products.

The Loshbough-Jordan Tool & Machine Co., Elkhart, Ind., recently organized with $100,000 capital stock, is a reorganization into a corporation of a company which was formerly a partnership. The company has no plans to add new equipment or new lines at this time. Officers are J. E. Loshbough, president; R. M. Loshbough, vice-president; M. M. Jordan, second vice-president; J. C. Jordan, secretary and treasurer.

Pacific Coast

SAN FRANCISCO, June 25.

APPLICATION has been made by the Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, to construct and operate a hydroelectric generating plant in Nevada and Placer Counties, to include an irrigation works with a number of electric-operated pumping stations, with project estimated to cost $8,000,000. It will be carried out in cooperation with the Nevada Irrigation District. The company has plans for a new automatic power substation at Shattuck Avenue and Forty-first Street, Oakland, Cal., to cost $290,000 with equipment. The engineering department is in charge.

The Leahy Mfg. Co., 1804 East Eighth Street, Los Angeles, manufacturer of oil burning devices, has let a general contract to B. F. Yarnell, 227 South Union Avenue, for the erection of a one-story machine shop.

The Alpine Paper Co., Coquille, Ore., is reported to be planning the construction of a new paper and pulp mill estimated to cost $450,000. A power house will be build.

The Neptune Meter Co., Los Angeles, will begin the erection of a new three-story shop and distributing works, 115 x 130 ft., to cost approximately $90,000 including equipment.

The Yellow Pine Box & Lumber Co., Winesap, Wash., has tentative plans for the rebuilding of the portion of its mill destroyed by fire June 16, with loss estimated at $100,000 including equipment. It is proposed to install electrically-operated machinery.

The Pacific Portland Cement Co., Consolidated, Pacific Building, San Francisco, has acquired the plant and property of the Imperial Gypsum Co., El Centro, Cal., and contemplates expansion and development to cost $500,000 including machinery.

The Municipal Power Bureau, Tacoma, Wash., has rejected bids recently received for the erection of the proposed municipal power plant at Lake Cushman, and will ask new bids at an early date. This will be the first of a number of stations.

The Aluminum Cooking Utensil Co., New Kensington, Pa., will soon begin the superstructure for its two-story plant at Oakland, Cal., to cost approximately $100,000 including equipment. Contract has been let to the Truscon Steel Co., San Francisco.

The Los Angeles Gas & Electric Co., 645 South Hill Street, Los Angeles, has filed plans for a two-story automatic power substation at 428 South Hope Street, estimated to cost $80,000.

The constructing quartermaster, Fort Mason, San Francisco, will soon ask bids for two centrifugal pumps, one of 1500 gal. per min., single stage, and the other, 1000 gal. per min., single stage.

The San Joaquin Irrigation District, Manteca, Cal., has authorized the sale of bonds for $430,000, a portion of the proceeds to be used for the installation of a series of pumping plants.

The Buckley Door Co., Evans and Quint Avenues, San Francisco, will begin the erection of a one-story plant for the manufacture of doors, windows and kindred products, estimated to cost $45,000 with equipment.

The San Joaquin River Storage District, Madera, Cal., has engaged A. J. Wiley, Boise City, Idaho, consulting engineer, to prepare plans for its proposed power dam and hydroelectric generating plant, estimated to cost more than $500,000.

The Steel Form Corporation, San Francisco, Cal., manufacturer of steel forms for concrete blocks, has acquired a plant at Ninth and Channing Streets, Los Angeles, and will move its equipment from San Francisco. Some new machinery will be required. C. B. Hopkins heads the company.

M. I. Gardner, 511 East Ninth Street, Los Angeles, is in the market for a 50-ton power-driven hydraulic press.

The C. F. Bulotti Machinery Co., 67-71 Main Street, San Francisco, is inquiring for one 42- or 48-in. vertical boring machine; 84-in. vertical boring mill; horizontal boring, drilling and milling machine, a 4½-in. spindle; a heavy duty lathe, 48- to 54-in. swing, 30-ft. centers, and plate bending rolls, pyramid type, 16- to 18-ft. for ⅞-in. plate.

South Atlantic States

BALTIMORE, June 30.

THE United Railways Co., Continental Building, Baltimore, will begin the erection of a one-story automatic power substation at Caroline and Fairmont Avenues, for which a general contract has been awarded to DeCou & Davis, 6 East Mulberry Street.

D. C. Ephinstone, Inc., 408 Continental Building, Baltimore, machinery dealer, has inquiries out for a stiff leg derrick, about 40 tons capacity.

The Menasha Printing & Carton Co., Menasha, Wis., has leased property from the Canton Co., Colgate, Baltimore, totaling 42,000 sq. ft., for the establishment of a branch plant to manufacture paper cartons and boxes. An option has been taken on 40,000 sq. ft. additional space, and it is proposed to extend the plant.

The Industrial Machinery Division, Room 815, Bureau of Foreign and Domestic Commerce, Washington, has information regarding a company at Para, Brazil, in the market for American bakers' and confectioners' machinery, ovens, power equipment, etc., for installation in a factory recently destroyed by fire. The company is also interested in sugar refining machinery. Catalogs and information should be addressed to the division, marked "for transmission to the American Consul, Para, Brazil."

The Hackley Morrison Co., Inc., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a motor-driven hoist, about 5 tons capacity, 220-volt, three-phase motor; also for one upright boiler, 48 to 50 in. diameter, 8½ ft. high; drag line equipment, steam or electric-operated, 100-ft. boom, with ½-yd. capacity dipper.

C. A. Platt, 101 Park Avenue, New York, architect, has plans for a three-story automobile service, repair and garage building at Baltimore estimated to cost $105,000 with equipment, for which bids will be asked at once on a general contract.

The Kinzer Price Mountain Coal Co., Blackburg, Va., recently organized, is planning for the installation of pumping equipment, boilers, mine cars, hoisting equipment and other machinery. Wirt Dunlap is secretary.

R. E. Suggs, 1516 Healey Building, Atlanta, Ga., machinery dealer, is in the market for a three-drum hoisting engine, 8 x 10 in. or 10 x 12 in.

The Board of Trustees, Wake Forest College, Wake Forest, N. C., is taking bids until July 8 for a central steam power plant estimated to cost $50,000.

Archer's Laundry, 336 North Howard Street, Baltimore, will install electric motors, controls and other electric power equipment at its new plant at Eutaw and Madison Streets, now in course of construction, to cost $125,000 with machinery. Power will be furnished by the Consolidated Gas, Electric Light & Power Co.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until Aug. 13 for a 750,000 gal. capacity elevated steel water tank on steel tower for the naval operating base, Pearl Harbor, T. H., specification 4992. L. E. Gregory is chief of the bureau.

Bids will be received by the Board of City Commissioners, Oxford, N. C., until July 10 for equipment for the municipal waterworks, including pumps and accessory apparatus, motors and other electric power equipment. Plans and specifications at the office noted or at the office of William C. Olsen, Raleigh, N. C., engineer.

The Granite City Cannery, P. O. Box 762, Elberton, Ga., is in the market for automatic canning machinery, power equipment, etc., to develop an output of 3000 cans of food products per day. T. N. Colley is president.

The Oxford Mfg. Co., Oxford, N. C., has started work on a one-story plant for the manufacture of automobile license plates and other stamped metal products.

The Hollingsworth & Vose Co., 141 Milk Street, Boston, manufacturer of paper products, is said to have concluded negotiations for the purchase of 320 acres on Dunpals Creek, Covington, Va., as a site for a new plant for the production of fine papers.

The North Carolina Public Service Co., Greensboro, N. C., has plans under consideration for extensions and improvements in the different power plants of the Piedmont Power & Light Co., Gibsonville, N. C., and vicinity, to include the installation of additional equipment. The Piedmont company was acquired by the North Carolina organization several weeks ago.

The Southern Railway Co., Washington, has awarded a general contract to the Dwight P. Robinson Co., 125 East Forty-sixth Street, New York, for the erection of its passenger and freight car repair shops at Hayne, S. C., estimated to cost $150,000 with equipment.

The Georgia Railway & Power Co., Atlanta, Ga., is planning for a bond issue of $3,000,000, a considerable portion of the proceeds to be used for hydroelectric power development on the Tallulah River, including power dams and generating stations.

STEEL AND INDUSTRIAL STOCKS

The range of prices on active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers ..	47¼	50⅝	Inland Steel.....	32⅝	33½
Allis-Chal. pf....	93¼	95½	Int. Har.....	85⅞	89⅞
Am. B. S. & Fdy.	80½	80½	Int. Har. pf.....	108	108½
American Can...	106	112¼	Lima Loco.....	58⅜	61¼
Am. Can pf.....	114⅜	115	Nat.-Acme	6¼	6⅝
Am. Car & Fdy..	160	164	Nat. En. & Stm.	21⅛	24⅝
Am. C. & F. pf..	123¼	123¼	Nat. En. & S. pf.	80	80
American Loco..	72½	74⅞	N. Y. Air Brake.	42⅝	44½
Am. Loco. pf....	119	119	Nova Scotia Stl..	50	50¼
Am. Radiator....	102	103⅜	Otis Steel.....	7½	8⅛
Am. Steel Fdries.	34½	35⅝	Otis Steel pf.....	48	50¾
Am. Stl. Fd. pf..	102½	102½	Pressed Stl. Car.	46⅜	50¼
Baldwin Loco....	110⅛	115	Replogle Steel...	7½	10⅞
Baldwin Loco. pf.	114⅛	114⅛	Republic	44⅝	47⅞
Bethlehem Steel.	45	47	Republic pf.....	84	86
Beth. Stl. 7% pf.	90	90½	Sloss-Sheffield ...	54⅛	58⅞
Beth. Stl. 8% pf.	102	102⅛	Steel of Canada..	72	73
Br. Em. Steel....	3	3⅛	Transue-Wms. ..	28	28
Br. Em. Stl. 2 pf.	9½	9⅝	Un. Alloy Steel..	22	22½
Chic. Pneu. Tool	85	86	U. S. Pipe.....	91⅝	96½
Colo. Fuel.....	43½	47¼	U. S. Pipe pf....	92	92⅞
Crucible Steel....	50⅞	53⅝	U. S. Steel.....	96½	100¼
Crucible Stl. pf..	88	88¼	U. S. Steel pf....	121⅛	121⅞
Deere pf.....	62	62	Vanadium Steel..	21⅛	23
Gen. Electric....	229¼	239¼	Va. I., C. & Coke	71	71
Gt. No. Ore Cert.	27	27½	W'house Air Br..	92½	93¾
Gulf States Steel	66¾	71⅝			

The W. W. Sly Mfg. Co., Cleveland, has recently taken orders for sand blast rooms, each order being for two units, for the Granite Steel Co., Granite City, Ill., the Kensington Davis Corporation, Buffalo, and the Crane Enamelware Co., Chattanooga, Tenn. The company also reports a good volume of orders for its other lines of equipment. During the past three or four weeks, it has taken orders for about 50 tumbling mills and 18 dust arresters. Other orders include a 19-ft. continuous tumbling mill with conveyor placed by the Continental Heater Co., Dunkirk, N. Y., for tumbling cast iron radiator sections.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.34c.
Swedish charcoal iron bars, base	6.75c. to 7.00c.
Soft steel bars, base price	3.34c.
Hoops, base price	4.59c.
Bands, base price	4.09c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.44c.
Channels, angles and tees under 3 in. x ¼ in., base	3.34c.
Steel plates, ¼ in. and heavier	3.44c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.35c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.60c.
Toe-calk, ½ x ⅝ in. and larger	4.30c.
Cold-rolled strip, soft and quarter hard	7.50c. to 8.50c.
Open-hearth, spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds	4.25c.
Square, flats and hex	4.75c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	4.14c.
No. 12	4.19c.
No. 14	4.24c.
No. 16	4.34c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.45c. to 4.70c.	.....
Nos. 22 and 24	4.60c. to 4.85c.	5.10c.
No. 26	4.65c. to 4.90c.	5.15c.
No. 28*	4.75c. to 5.00c.	5.25c.
No. 30	4.95c. to 5.20c.	.....

Galvanized

	Per Lb.
No. 14	4.85c. to 5.10c.
No. 16	5.00c. to 5.25c.
Nos. 18 and 20	5.15c. to 5.40c.
Nos. 22 and 24	5.30c. to 5.55c.
No. 26	5.45c. to 5.70c.
No. 28*	5.75c. to 6.00c.
No. 30	6.25c. to 6.50c.

*No. 28 and lighter, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	—41	—24	½ in. Butt	— 4	+19
¾ in. Butt	—46	—32	¾ in. Butt	—11	+ 9
1-3 in. Butt	—48	—34	1-1½ in. Butt.	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap	— 5	+14
7-8 in. Lap	—41	—11	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap	—34	— 6	7-12 in. Lap	— 3	+16

Bolts and Screws

Machine bolts, cut thread, 50 to 60 per cent off list

Carriage bolts, cut thread, 40 to 40, 10 and 10 per cent off list

Coach screws, 50 and 10 to 60 per cent off list

Wood screws, flat head iron, 75, 20 and 10 per cent off list

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c. to 4.50c.
Annealed soft	4.50c. to 4.75c.
Galvanized annealed	5.15c. to 5.40c.
Coppered basic	5.15c. to 5.40c.
Tinned soft Bessemer	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	16¼c. to 17¼c.
High brass wire	16¾c. to 17¾c.
Brass rods	14 c. to 15 c.
Brass tube, brazed	24¼c. to 25¼c.
Brass tube, seamless	20½c. to 21½c.
Copper tube, seamless	21¾c. to 22¾c.

Copper Sheets

Sheet copper, hot rolled, 19½c. to 20c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin Grade "AAA" Charcoal 14x20	Bright Tin Grade "A" Charcoal 14x20	Coke—14 x 20 Prime	Coke—14 x 20 Seconds
		80 lb.	$6.55 $6.30
		90 lb.	6.65 6.40
		100 lb.	6.75 6.50
IC $11.75	$9.50	IC	7.00 6.75
IX 13.25	11.50	IX	8.25 8.00
IXX 14.50	12.50	IXX	9.50 9.25
IXXX 15.50	13.75	IXXX	10.75 10.50
IXXXX 16.50	14.75	IXXXX	12.00 10.75

Terne Plates

8 lb. coating, 14 x 20

100 lb	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	45c.
Bar	48c. to 53c.

Copper

Lake ingot	16 c.
Electrolytic	15½c.
Casting	14½c.

Spelter and Sheet Zinc

Western Spelter	7½c.
Sheet zinc, No. 9 base, casks	10½c. open 11¼c.

Lead and Solder*

American pig lead	8½c. to 9c.
Bar lead	11c. to 12c.
Solder, ½ and ½ guaranteed	33¼c.
No. 1 solder	31¼c.
Refined solder	27¼c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	10½c. to 11c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	36c.

Old Metals

There is a better feeling in the market and inquiry has improved. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy crucible	10.75
Copper, heavy wire	10.25
Copper, light bottoms	8.50
Brass, heavy	6.00
Brass, light	5.00
Heavy machine composition	7.75
No. 1 yellow brass turnings	6.50
No. 1 red brass or composition turnings	7.50
Lead, heavy	5.75
Lead, tea	4.25
Zinc	3.50
Cast aluminum	14.50
Sheet aluminum	14.50